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IMPERIAL MINERAL RESOURCES  
BUREAU.

# LAWS AND REGULATIONS

RELATING TO

## LEAD POISONING.

BEING AN ANALYSIS WITH TEXTS OF  
THE LAWS AND REGULATIONS MADE  
IN THE CHIEF INDUSTRIAL COUNTRIES  
TO PREVENT PLUMBISM.

BY

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Prepared for the Governors of the Imperial Mineral Resources Bureau.

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LONDON:

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## INTRODUCTORY NOTE.

The Governors of the Imperial Mineral Resources Bureau, acting on a recommendation made to them by the Advisory Technical Committee on Lead and Zinc, resolved that the Bureau should collect details as to legislative enactments in respect of, and the regulations governing, the employment of workers in the following industries, in all parts of the world where lead is extensively mined or used in manufactures, viz., in :—

- (1) Lead Mines.
- (2) Lead Metallurgical Works.
- (3) Those works into the manufactures of which lead largely enters.

The work has been prepared in consultation with the Legal Committee of the Bureau in conjunction with the Advisory Technical Committee on Lead and Zinc and its publication has been authorised by the Governors.

The thanks of the Governors are due to the Advisory Technical Committee on Lead and Zinc for their advice and to the corresponding members of the Bureau in the Dominions, India, the Crown Colonies and Protectorates for the valuable help they have afforded the Bureau in providing material relative to their several countries.

At the present time when much attention is being directed to the consideration of the subject of lead poisoning, it is hoped that the work may be of service to those who are dealing with the matter, as well as being informative to the general public.

R. A. S. REDMAYNE,

Chairman of the Governors.

January, 1922.

## PREFACE.

In the following work the various laws and regulations containing the provisions made in the various countries with a view to the prevention of plumbism are collected. In the last chapter plumbism is also treated from the point of view of its being a compensatable industrial disease.

The main purpose being to show, by means of a conspectus of the various laws and regulations, the means by which the consequences flowing from lead poisoning have been to a great extent mitigated, certain regulations are included which may not now be law. Thus, for example, it is practically impossible to ascertain the present condition of the law in Russia, but several regulations made prior to the revolution are included, as these regulations may be worthy of examination, even though they have since been modified or repealed. In the great majority of cases, however, the laws and regulations here given express the existing law on the subject in the respective countries.

It is considered probable that the collection here presented is substantially complete at least so far as the British Empire and Europe are concerned. The French, Swiss, and German Governments have been good enough to forward at the request of the Imperial Mineral Resources Bureau collections of relevant laws and regulations.

Much assistance has been received from the Bureau's various correspondents throughout the British Empire.

The translations here presented have not, with two exceptions, been specially made for this work, but are reproductions, with minor emendations, of translations which have already appeared in certain Blue Books or in the Bulletin of the International Labour Office, or in the new series known as the Legislative Series of the International Labour Office. The collection is believed to be complete to the end of 1920.

The legislation of certain countries has not been referred to. This is due to the fact that in these countries there is either no legislation specifically relating to lead operations, or because such regulations are part and parcel of factory legislation generally, the lead industries being grouped with other industries in various categories. In the first class, for example, falls Norway, whose Factory Act of 1915 contains wide general provisions along well-recognised lines, but which are not specially concerned with the dangers which cause plumbism; in the second category fall the Netherlands, whose Safety Act of 1916 divides trades into groups, and relates its general provisions to these groups. To incorporate such an Act in this work would be to exceed the ambit of its purpose. Certain extracts from Chapter I of the decree of

August 21st, 1916, are, however, included. Further information on this subject as regards the Netherlands may be obtained from Mr. Stenfert Kroese's *Veiligheidswet* (published by W. E. J. Tjeenk Willink, Zwolle).

The text of the Regulations (Great Britain) recently made relating to the manufacture of carbonate, sulphate, nitrate, and acetate of lead will be found in Appendix A. The Orders made under the Women and Young Persons (Employment in Lead Processes) Act, 1920, and issued in November, 1921, will be found in Appendix B.

The text of the recent Convention concluded at Geneva relating to the use of White lead has not been published at the time of going to Press.

I desire to thank Mr. C. E. A. Bedwell, a member of the Editorial Committee of the Society of Comparative Legislation, for placing his great knowledge of the bibliography of comparative law at my disposal and Mr. C. M. Knowles, barrister-at-law, for information relative to Workmen's Compensation laws in the United States.

GILBERT STONE.

4, Harcourt Buildings  
Inner Temple

January, 1922.

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# PART I.

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## CHAPTER I.

### Group 1.—Lead Mining.

Lead ores are widely distributed, the great lead producing countries being the United States, Germany, Australia and Mexico. Important quantities are also produced in Burmah, Canada, Italy and France, while in Rhodesia an important deposit has been discovered.

The most important of the lead ores are sulphide (galena) and the carbonate (cerussite). In almost all cases lead is found in conjunction with other metals particularly zinc, also copper, gold and silver.

It may be stated that, as a general fact with but few exceptions, the underground working of lead ores has not called for special regulations directed against plumbism. There are, of course, in many instances regulations against dry drilling or regulations requiring the use of the water blast or similar contrivances to prevent the generation of dust. It is not possible to state, however, to what extent such regulations are designed to avoid the danger of plumbism, for similar regulations are to be found in all the great mining countries even where lead is not mined, the primary purpose in many cases being to avoid miners' phthisis.

To give an example, by the Mines and Works Inspection Act, 1920, of South Australia, it is provided in the Second Schedule that regulations may be made *inter alia* for the protection of health in mines including the prevention and laying of dust, prevention of the escape of poisonous and deleterious gases or fumes from any chemical or metallurgical process in use on mines, the use of water, sprays, atomisers and other damping appliances, the use of apparatus for collecting, filtering and preventing the inhalation of dust, the provision and construction of changing houses and accommodation, baths, washing appliances, the destruction of clothes and drying of clothes. It is in no way indicated, however, that these provisions are in any way specially designed to guard against plumbism, and they are consonant with other aims which modern mining regulations seek to achieve.

From a report which the Bureau has received from the Burma Corporation Ltd., it would appear that mining in sulphide ore, where the ore is wet or is wetted so that no dust is created, does not in practice give rise, at any rate to any serious extent, to plumbism. At Bawdwin, no cases have arisen. This immunity may be attributed to a certain extent to the fact that the ore there is wet and is a sulphide ore, and to the further

fact that the miners work their shift without a break for meals and consequently are able before eating to wash and clean themselves.<sup>(1)</sup>

Again, according to a report received from the Rhodesia Broken Hill Development Co. Ltd., where the ores consist of carbonate of lead with carbonates and silicates of zinc no particular regulations have been found to be necessary. The mining there is done on the open cut system, and is accomplished practically without the formation of dust owing to the wet conditions of the ore.

In the United Kingdom, at the comparatively small mines for which special rules have been issued<sup>(2)</sup> no particular rules are to be found dealing with the prevention of plumbism, but by Regulation 12 of the Foxdale Mines Special Rules it is provided that when rock drills are used the holes shall be kept wet to prevent the atmosphere from being charged with dust.

In Germany special rules have been made with regard to the employment of women in the lead, zinc and anthracite coal mines, but these do not aim primarily at the prevention of plumbism, being the same for lead mines as for coal mines, and the restrictions there imposed upon woman labour are considerably less than those now indicated in the Convention approved at Washington in 1919 and referred to in the Schedule to the Employment of Women, Young Persons and Children Act, 1920.

(1) Mr. Hall's report on which the above paragraph is based is as follows :—

You will note that no cases of lead poisoning are known of in or about Bawdwin. There has been considerable discussion, as you know, as to whether miners can take lead poison when working in sulphide ore. Now, I am free to confess that I have never known a case where lead poisoning was directly traced to the mining of sulphide ores, but I am also convinced that there could be such a case, presupposing a dry mine and drilling without water in the old style method. Inasmuch as the ore body in Bawdwin is quite wet, we have, as you know, no dust there. Again we have no oxidised ore, so that poisoning from this source is not possible. It is true that lead can be got into the system in other ways and even worse ways than by dust, *i.e.*, from dirty hands and uncleanness. This does not operate in Bawdwin to the extent that it does in the Smelting Plant, inasmuch as the men work there 8 hours straight through, and do not stop for meals in general. The Europeans come out of the mine so that both people have a chance to wash and clear up before eating.

I am convinced from observation that the greater portion of our cases of lead poisoning in the lead smelting plant come not from volatilized lead or from the gases and dust in existence, but from the lack of cleanliness and from eating food within the plant. Wash places are provided and our foremen endeavour to have them used, but I need not tell you that it is somewhat difficult to break into centuries of habit in this country. However, we hope that a constant pressure in this direction will not be without result.

(2) See Codes of Rules in use in Mines and Quarries in the United Kingdom, 1908, Royal Commission on Mines.

*New South Wales Regulations.*—In New South Wales regulations issued under the Mines Inspection Act, 1901 (Section 48)<sup>(1)</sup> have been made.

These regulations<sup>(2)</sup> in so far as they relate to mining as distinct from surface or smelting operations provide for a record of cases to be kept<sup>(3)</sup> and for a supply of drinking water to be available.<sup>(4)</sup> No person employed in a mine may carry any vessel containing tea, water, or any other fluid for drinking purposes unless covered with a tight fitting lid which may not be removed in the mine except when a drink is required.<sup>(5)</sup> Bathing facilities must be provided.<sup>(6)</sup> Every underground workman is required to change his ordinary clothes for working clothes in the changing rooms before descending to his work and must change again on finishing work and before leaving the mine.<sup>(7)</sup>

The rest of the regulations (except those which require a copy to be supplied to the workman and prescribe penalties<sup>(8)</sup>) relate primarily to smelters and are considered under Group 2.

As a result of the deliberations of the Commission which sat to inquire into the mining industry at Broken Hill<sup>(9)</sup> recommendations were made that plumbism should be a compensatable industrial disease. The new Workmen's Compensation Act of New South Wales which gave effect to these recommendations came into operation in 1919, and almost at once a noticeable increase in the case rate was apparent although by that date operations in the carbonate ores were only being carried out on a comparatively small scale and mainly sulphide ore was being mined.<sup>(10)</sup>

## CHAPTER II.

### Group 2.—Lead smelting of materials containing lead, manufacture of red lead, orange lead, or of flaked litharge.

#### (1) Great Britain.

Regulations were made in 1911<sup>(11)</sup> which imposed duties on (a) occupiers, (b) employed persons.

<sup>(1)</sup> Section 48 provides that—

(1) The Governor may make regulations for the prevention of lead poisoning either by inhaling the finely powdered lead mineral in the mine or by inhaling the oxide of lead fumes from the furnaces during smelting operations, or in the conduct of any operation in connection with the obtaining of any metal or any mineral other than coal or shale or any operations for the purpose of treating the products of any mine.

<sup>(2)</sup> For text, see *post*, p. 124.

<sup>(3)</sup> Reg. 1.

<sup>(4)</sup> Reg. 2.

<sup>(5)</sup> *Ibid.*

<sup>(6)</sup> Reg. 3.

<sup>(7)</sup> Reg. 5.

<sup>(8)</sup> Regs. 11 and 12.

<sup>(9)</sup> Report of the Royal Commission on the Mining Industry at Broken Hill, in the State of New South Wales, 1914, 58802.

<sup>(10)</sup> See *Industrial Australian and Mining Standard*, June, 1921, p. 1023. Health conditions at Broken Hill Mines.

<sup>(11)</sup> 1911, No. 752 for text see *post* p. 61. See Appendix A for the regulations relating to the manufacture of various lead salts.

(a) *Duties of Occupiers.*

Numerous obligations are imposed having for their main purpose the prevention, removal, or laying of dust, and the cleanliness and medical examination of the workers. Certain restrictions are imposed on employment.

*Prevention, etc., of dust and fumes.*—All floors must be maintained in good condition and must be sprayed with water at least once a day. No lead material other than ingots of metal<sup>(1)</sup> may be deposited or allowed to remain on any part of the floor not set apart for the purpose, or be moved to a furnace, unless (1) it is damp, or there is an efficient exhaust draught, or (2) the lead material is enclosed so as to prevent the escape of dust, or (3) unless the persons moving the material wear respirators.<sup>(2)</sup>

The following operations must be carried on under an efficient exhaust draught :—

- (1) Melting lead or dirty scrap lead.
- (2) Sorting lead material so that vapour containing lead is given off.
- (3) Cooling molten flaked litharge.
- (4) Feeding any furnace or retort.
- (5) Manipulating any lead material in any furnace or retort.
- (6) Removing lead material from any furnace or retort.
- (7) Placing in any hopper or shoot or packing red or orange lead or flaked litharge.<sup>(3)</sup>

No sack which has contained lead material may be cleaned and no lead material may be broken up (except in the process of sampling, crushing or grinding) unless such sack or lead material is damped or is placed in an apparatus so enclosed as to prevent the escape of dust.<sup>(4)</sup>

No person is allowed to enter a furnace, melting pot, retort, condensing chamber or flue until it has been ventilated,<sup>(5)</sup> or to remain in any flue more than three hours without an interval of at least half an hour.<sup>(6)</sup>

*Cleanliness, etc.*—Overalls must be provided in the processes indicated in Regulation 8, and such overalls must be washed clean or renewed at least once a week.<sup>(7)</sup>

Respirators must be provided in the cases above mentioned where respirators are required and where the person is employed

<sup>(1)</sup> For definition, *see* regulations.

<sup>(2)</sup> *See* Reg. 2. Respirators are allowed as an alternative where conditions as to damping are impracticable.

<sup>(3)</sup> Reg. 3. Processes 4-7 may be carried on without an efficient exhaust draught if carried on in such a manner as to prevent the escape of gas, vapour, fumes or dust, into any place in which work is carried on. No lead material giving off vapour containing lead may be removed from the efficient exhaust draught required by Reg. 3 unless in a receptacle with an efficient cover. *See* Reg. 5.

<sup>(4)</sup> Reg. 4.

<sup>(5)</sup> Reg. 6.

<sup>(6)</sup> Reg. 7.

<sup>(7)</sup> Reg. 8.

in any of the processes indicated in Regulation 8.<sup>(1)</sup> Such respirators, when required for use, must be washed or renewed at least once every day.<sup>(1)</sup>

A meal room, a dressing room, and a place for the storage of overalls must be provided and maintained,<sup>(2)</sup> and these places must be so located as not to be exposed to dust or fumes.<sup>(2)</sup>

A lavatory and bath accommodation must be provided.<sup>(3)</sup> In the lavatory there must be a sufficient supply of clean towels renewed daily, also soap and nail-brushes.

*Medical examination.*—Every person employed in a lead process must be medically examined once every calendar month at least, and a health register must be kept.<sup>(4)</sup> After suspension, no person may be employed in any lead process without written sanction from the certified factory surgeon entered in the health register.<sup>(5)</sup>

*Restrictions on employment.*—No person under 16 years of age and no female may be employed in any lead process<sup>(6)</sup> as defined in the regulations.

(b) *Duties of Persons Employed.*—Clothing must be deposited in the dressing room, overalls where required must be worn, removed before eating or leaving the premises and deposited in the place for storage of overalls; respirators when required must be worn.<sup>(7)</sup>

Washing before eating is required.<sup>(8)</sup> No person may introduce, keep, prepare or partake of any food or drink (other than a non-alcoholic drink approved by the surgeon) or make use of tobacco in any place in which any lead process is carried on.<sup>(9)</sup>

Persons employed in any lead process must present themselves at the appointed time for medical examination<sup>(10)</sup> and if suspended may not work in any lead process without written sanction.<sup>(11)</sup>

No person employed may interfere in any way, except with the concurrence of the occupier or manager, with the means provided for the removal of gas, vapour, fumes or dust and for the carrying out of these Regulations.

## (2) Union of South Africa.

There are no special regulations with regard to the lead industries or processes, but under the Factory Act, 1918, the Governor-General is by Section 24 given power to declare any occupation

(1) Reg. 9.

(2) Reg. 11.

(3) For details see Reg. 12.

(4) Regs. 13 (a) and (b).

(5) Reg. 13 (c).

(6) Reg. 10. Note that now in virtue of the Women and Young Persons Employment in Lead Processes Act, 1920, it is provided that it will not be lawful for any one to employ any woman or young person in any of the operations provided in section 1, see *post*, p. 57, or in any of the processes indicated in section 2.

(7) Reg. 14.

(8) Reg. 16.

(9) Reg. 15. Except in the processes named in Reg. 8, a person may, however, use tobacco other than a cigar or cigarette if his hands are free from lead.

(10) Reg. 17.

(11) Reg. 18.

a dangerous occupation. When an occupation has been so proclaimed then by Section 25 the occupier is guilty of an offence if any person employed in the factory takes a meal in a room or place in which any noxious or dangerous handicraft or occupation has been carried on. The person employed is also guilty of an offence. Further, by Section 29 (*d*), every factory is required to be ventilated so that all gases, fumes, dust and other impurities are removed or rendered harmless.

By the Regulations dated the 24th April, 1919, made under the Factories Act, there are contained no specific provisions relating to industries in which lead or lead compounds are made or used, but the Regulations contain general provisions relating to ventilation where dust is likely to be generated and provides that special washing facilities may be required by the Inspector in the case of factories where poisonous substances are dealt with.

### (3) Tasmania.

Under the Mines and Works Regulation Act, 1915, general rules have been made for smelting works.<sup>(1)</sup> These Regulations provide for the supply of pure water,<sup>(2)</sup> prevent the use of vessels containing liquids for drinking unless covered,<sup>(3)</sup> provide for the proper damping of dust,<sup>(4)</sup> provide for washing and changing of clothes,<sup>(5)</sup> require provision to be made to prevent so far as practicable the emission of flue dust from smelter stacks,<sup>(6)</sup> and for the careful wetting of flue dust as soon as drawn from the flue.<sup>(7)</sup>

Flue dust may not be accumulated so as to be a nuisance.<sup>(7)</sup> Where lead ores are smelted the furnaces must be surrounded with a hood which must extend below so as to catch fumes from molten metal or slag;<sup>(8)</sup> such hoods must terminate in a chimney or other means of access to the air.<sup>(8)</sup>

### (4) Victoria.

Regulations have been made relating to the manufacture of white lead, red lead or litharge.<sup>(9)</sup> The Regulations in question are dated the 31st August, 1920, and are made under the Factories and Shops Act.

As in the case of Great Britain, the duties are divisible into two groups; "employer," however, takes the place of "occupier."

#### (a) Duties of Employer.

*Prevention, etc., of Dust and Fumes.*—Floors must be cleaned daily after being thoroughly damped.<sup>(10)</sup>

(1) See *post*, p. 127. for text.

(5) Reg. 4 and also Reg. 3.

(9) For text see *post*, p. 121.

(2) Reg. 1.

(6) Reg. 5.

(10) Reg. 4.

(3) Reg. 2.

(7) Reg. 6

(4) Reg. 3.

(8) Reg. 7.

All floors must be imperviously paved and laid so as to drain into impervious drains.<sup>(1)</sup> Dust and fumes must be efficiently controlled by means of exhaust draught, etc.<sup>(2)</sup>

*Cleanliness, etc.*—Overalls must be supplied, provided, maintained, and at least one a week thoroughly cleaned.<sup>(3)</sup>

Respirators must be supplied for persons engaged in packing or handling dry white lead, dry red lead or litharge, or drawing stoves.<sup>(4)</sup>

Dressing rooms, bath, and lavatory accommodation and sanitary conveniences must be supplied and must be cleaned daily.<sup>(5)</sup>

Washing time must be allowed<sup>(6)</sup> and an adequate supply of hot and cold water, soap, turpentine or oil, nail brushes and clean towels must be provided and maintained.<sup>(7)</sup>

A luncheon room free from dust and fumes must be supplied.<sup>(8)</sup>

*Supply of Medicinal Compound.*—There must be kept available for use by employers either (a) a medicinal compound prescribed by a duly qualified medical practitioner as being suitable for counteracting the pathological effects of lead absorption or for aiding the elimination of lead from the human system, or (b) a medicinal compound of the following ingredients: sulphate of magnesium (epsom salts) 2 ozs., water 1 gallon, lemon syrup sufficient to flavour.<sup>(9)</sup>

*Restrictions on Employment.*—No male under the age of 18 years and no female under any age may be employed at any work exposing him or her to the dust of white lead, red lead or litharge.<sup>(10)</sup>

#### *Duties of Employees.*

Smoking, chewing tobacco, taking of snuff, partaking of or preparing food or drink while employed in a lead process is forbidden.<sup>(11)</sup>

Wearing of overalls and respirators is compulsory in the circumstances indicated in Regulation 11.

Before eating or entering eating rooms, overalls, head coverings, and respirators must be removed and placed in the place provided and the person must thoroughly wash.<sup>(12)</sup>

### **(5) New South Wales.**

Regulations have been made under the Mines Inspection Act, 1901.<sup>(13)</sup>

*Prevention, etc., of Dust and Fumes.*—Adequate provision must be made to prevent, as far as practicable, the emission of flue

(1) See Clause 6, Class G, paragraph (1), *post*, p. 122.

(2) *Ibid.*, paragraph (2).

(3) Reg. 2.

(4) Reg. 3. Must be cleaned daily and kept in a suitable place. Class G, paragraph 9.

(5) Reg. 5 and Class G, paragraph 4-8.

(6) Reg. 6.

(7) Reg. 7.

(8) Class G, paragraph 3.

(9) Reg. 8.

(10) Reg. 1.

(11) Regs. 9 and 10.

(12) Reg. 12.

(13) For text, see *post*, p. 124.

dust from smelter stacks.<sup>(1)</sup> The ports by which flue dust is removed from champion flues may not open into tapping floors, but the outlet must be on the other side of the flues into a space otherwise unoccupied.<sup>(2)</sup> The floors to which the dust falls when first hoed out must be smooth and impermeable and must be provided with a kerb raised above the surrounding surface, so that the deposited dust or mud may not be stepped on and carried about.<sup>(3)</sup> The floors must be perfectly clean except when in actual use.<sup>(3)</sup>

Flue dust must be carefully wetted as soon as it is drawn from the flue.<sup>(2)</sup> No accumulation of flue dust is permitted in any mine unless within a securely-closed receptacle.<sup>(2)</sup> No accumulation of dry flue dust is permitted outside the flues.<sup>(2)</sup>

Tapping floors must be ventilated at the angle between the top of the champion flue and the feed floor, to reduce draught on the tapping floor, and to afford fumes a way of escape.<sup>(3)</sup> Flues of larger diameter may be carried up through the feed floor without interfering with operations there, and they may expand below into oblong funnel-shaped openings.<sup>(3)</sup> Furnaces must be surrounded with a hood which expands below so as to catch fumes from molten metal and slag.<sup>(4)</sup> The hood must terminate on one side in a chimney leading to the air on the open side of the tapping floor.<sup>(4)</sup>

*Cleanliness, etc.*—The provision of bath-houses and changing rooms is required.<sup>(5)</sup> The baths must include both shower and plunge baths and must be warmed.<sup>(5)</sup> A bath register must be kept.<sup>(5)</sup> The changing rooms are required to be separate from but connected with the bath-rooms.<sup>(5)</sup>

Workmen engaged in smelting or otherwise handling lead ores or engaged in cleaning flues or gathering or transporting flue dust are required to change their clothes before commencing work.<sup>(6)</sup> <sup>(7)</sup> Men engaged in cleaning flues or gathering or transporting flue dust or in repairing a furnace in blast must wear respirators.<sup>(7)</sup> <sup>(8)</sup>

*Medical record.*—A record of lead poisoning cases must be kept and cases must be notified.<sup>(9)</sup>

## (6) Queensland.

There are no special regulations relating to lead, but power is provided in Part 1 of the Schedule to the Mines Regulation Acts (Consolidated) for the Governor-in-Council to make regulation for the prevention and escape of deleterious gases and fumes from a chemical or metallurgical process.

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(<sup>1</sup>) Reg. 6.      (<sup>2</sup>) Reg. 7.      (<sup>3</sup>) Reg. 8.      (<sup>4</sup>) Reg. 10.      (<sup>5</sup>) Reg. 4.  
                   (<sup>6</sup>) Reg. 5.      (<sup>7</sup>) Reg. 7.      (<sup>8</sup>) Reg. 9.      (<sup>9</sup>) Reg. 1.



**(7) Rhodesia.**

No special provision appears to be made, but the only company of large size which operates in lead, the Rhodesian Broken Hill Development Company, Limited, has issued regulations to be observed by their employes in the working of blast furnaces.<sup>(1)</sup>

These regulations provide for the carrying away of fumes, the sprinkling of floors with water, the wearing of respirators, washing, the drinking of oatmeal water in the quantities provided, and the taking of pills provided. The employes are also directed to avoid eating or smoking when their hands are dirty or in circumstances likely to introduce lead dust into the system.

**(8) India.**

By Section 19 (b) of the India Factories Act, 1911, it is provided that no woman or young person under the age of 18 years shall be employed in any factory in any of the operations specified in Part 1 of Schedule 1,<sup>(1)</sup> or, save in accordance with regulations contained in Part 2 of Schedule 1,<sup>(1)</sup> in any operation involving the use of lead compounds.

Part 2 requires the provision of an efficient exhaust draught to remove fumes or dust as nearly as may be at its point of origin, and provides for the medical examination of persons employed and the keeping of a health register. It also requires the employer to provide adequate protective clothing in a clean condition and suitable cloak-room, mess-room, and washing accommodation. It forbids the bringing in or consumption of food or tobacco in any room in which lead processes are carried on, and forbids any person to remain in such room at meal times. It requires that the room in which the persons are employed and all towels and apparatus used by them shall be kept in a clean condition.

**(9) Burma.**

There are no special regulations, but the Burma Corporation has issued instructions founded upon the British Factory and Workshops Act, 1901.

**(10) Canada.**

In Canada legislation of this nature comes under the jurisdiction of the various Provincial Governments. In all throughout Canada 1,058 men are employed in lead smelters and 5,795 men in other industries employing lead, and of these 5,795, 4,001 are employed in paint and varnish and in the glass industry. It will be observed that very little legislation relating to the lead industries has been considered to be necessary. Most of the Provincial Factory Acts contain general provisions directed against the

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(1) For text, see *post*, p. 131.

generation and inhalation of dust and fumes. Restrictions are commonly imposed on the employment of children, and in certain cases on the employment of young persons and women, in dangerous trades.<sup>(1)</sup>

(a) *British Columbia*.—No special regulations governing the manufacture of lead have been made.<sup>(2)</sup> By the Labour Regulation Act Amendment Act, 1918, an eight-hour day is established for smelter workmen, but this Act applies to other metals besides lead.

The Consolidated Mining and Smelting Company of Canada, Limited, has issued special rules which provide as follows :—

(1) A person showing signs of lead poisoning is removed to another part of the department of the plant before the disease becomes chronic.

(2) Employés are not allowed to eat food with dirty hands or in such parts of the plant as are exposed to lead dust.

Separate washing and eating rooms are provided. A special drink, formula for which is not disclosed, but which was supplied by the Factories Inspection Office, is supplied, and a special campaign of education has been undertaken among the employés.

(b) *Ontario*.—No special regulations are in force with regard to workers in lead works or mines, or in connection with the manufacture of lead products or of products of which lead forms a part. By Order in Council, dated October 9th, 1914, metal refining works and white and other lead factories are added to the list of factories which fall within Schedule A of the Factories Act, 1914.

(c) *Quebec*.—By the Quebec Industrial Establishments Act, R.S. of 1909, certain establishments are scheduled as dangerous. These include smelting works. In such establishments females under 18 and males under 14 may not be employed.<sup>(3)</sup>

(1) The following Factory Acts may be referred to on these points :—

(a) *British Columbia*.—The Factories Act, sections 11, 12 (c), 23, 28, 29 ; The Factories Act Amendment Act, 1918 (*see as to this, post*, p. 132).

(b) *Ontario*.—The Factory, Shop and Office Building Act, sections 28, 39, 41 (c), 43, 46.

(c) *Quebec*.—Revised Statistics of 1909, Articles 3831, 3832, 3833 (1), 3934–3938 : Regulations respecting Industrial Establishments, sections 90–94 ; By-Laws of the Board of Health, *see* Labour Legislation in Canada Vol. for 1915, p. 289 *et seq.*

(d) *Saskatchewan*.—The Factories Act, sections 3, 4, 7, 8 (3) (4), 14–16 ; The Public Health Act, 1919, section 9 (e).

(e) *Alberta*.—The Factories Act, sections 24–29, 30, 31 ; The Amending Public Health Act of 1919, section 3 (23).

(f) *Nova Scotia*.—The Nova Scotia Factories Act, sections 6–10, 16 (3).

(g) *Manitoba*.—The Manitoba Factories Act, sections 7, 12, 13 (c), 24, 27–30, 32 ; The Public Health Act, section 28.

(2) By Order in Council of 25th February, 1910, smelters were added to the list of factories contained in Schedule A of the Factories Act, 1911.

(3) The same applies to establishments in which the following processes are conducted : tinning of sheet-iron utensils and wire, varnishing metal dried in oven, paint (boxing and canning) ; canning works (soldering).

(d) *Saskatchewan*.—There appear to be no lead industries, but under Section 14 (4) of the Saskatchewan Factories Act provision is made for the guarding against the deleterious effects of impurities originating in the course of any manufacturing process that may be injurious to health.

(e) *Alberta*.—There is no legislation governing lead mines, lead metallurgical works, lead manufacture, or the use of lead manufactures.

(f) *Nova Scotia*.—There are no special regulations relating to lead mines, lead metallurgical works, lead manufactures, or the use of lead manufactures.

(g) *New Brunswick, Manitoba, and Yukon*.—No regulations.

## (11) United States of America.

Regulations for the lead and copper industries in New Jersey have been issued in the form of a circular letter.<sup>(1)</sup>

*Prevention, etc., of Dust and Fumes*.—The regulations provide for the elimination of dust by sprinkling, the use of automatic machine sampling, the use of exhaust ventilation. Where dust cannot be prevented the use of respirators is compulsory. Special provision is made for the cleaning of sacks<sup>(2)</sup> in the case of the roasting of lead ores. The desirability of properly hooding and of connecting the hoods with efficient mechanical exhaust ventilation is indicated.<sup>(3)</sup>

The making of charges for lead blasting furnaces is recognised as being specially dangerous, and damping before dumping is required.<sup>(4)</sup>

Feed floors are required to be impervious to fumes for the reason indicated in paragraph 4, and hoods with efficient mechanical exhaust ventilation are required in the tapping operations.<sup>(5)</sup>

Flues are required to be of a sufficient size, and to be provided with an efficient draught. Suitable provision must be made to guard against unfortunate results if accidental blocking occurs.<sup>(6)</sup>

Mechanical bag shaking is required so as to prevent the exposure of workers to dust generated in shaking the bags.<sup>(7)</sup>

If, in any of the various operations in lead refining, lead fumes habitually or from time to time pass into the air of the workrooms, such fumes must be removed by an efficient mechanical exhaust ventilation.<sup>(8)</sup>

The desirability of keeping the air of workrooms free from dust by damping is indicated in para. 13, and the hooding of lead melting and alloy kettles is required to prevent the evolution of lead fumes.<sup>(9)</sup>

(1) For text, see *post*, p. 212.

(2) Para. 1.

(3) Para. 2.

(4) Para. 3.

(5) Para. 5.

(6) Para. 6.

(7) Para. 7 (a).

(8) Para. 8.

(9) Para. 14, 15.

*Cleanliness.*—In certain dangerous processes indicated in para. 7 (b) the persons employed are required to wear overalls or respirators to be provided by the employer, and the desirability of the shortening of hours is indicated.<sup>(1)</sup>

For the reasons assigned in para. 16, the provision of sanitary lockers, a dressing-room or rooms, and convenient and adequate washing facilities with shower-baths for all lead employees is required, and to prevent the absorption of lead with food the installation of a sanitary and convenient luncheon-room is required.

The need for the enforcement of these conveniences is urged upon employers.

Processes or manufactures involving the use, employment, handling, or generation of lead its alloys or salts are subjected to various regulations in Missouri imposed by the Health and Safety Act, 1913, of that State.<sup>(2)</sup>

## (12) France.

The Decree dated the 1st October, 1913,<sup>(3)</sup> relates to a large number of lead working operations<sup>(4)</sup> in addition to those at present under consideration.

*Prevention, etc., of dust and fumes.*—Lead melting pots must be stored in a room distinct from other workshops.<sup>(5)</sup> At the places indicated in Regulation 2 it is necessary to instal, for the drawing off of fumes, hoods or other arrangements.

Lead oxides and other compounds of lead liable to give off dust must be damped or operated upon in an enclosed or dust-proof apparatus; alternatively the work must be done under a strong exhaust fan arranged as indicated in Regulation 3.<sup>(6)</sup> Alternatively respirators must be used.<sup>(6)</sup>

The grinding of lead products, their mixing, and use in powdered state must be carried out in a special and sufficiently ventilated room.

Tables on which these products are handled must have a waterproof top and floors must be impervious and must drain to a watertight sump. They must also be kept moist.<sup>(7)</sup> Tables, floors and walls must be washed at least once a week.<sup>(7)</sup> The splashing of liquid is forbidden.<sup>(7)</sup>

*Cleanliness, etc.*—The handling of oxides or other lead compounds, whether dry, wet, in suspension or solution, with the bare hands is forbidden.<sup>(8)</sup> Indiarubber gloves or similar appliances must be used.<sup>(8)</sup>

(1) Para. 7 (c). (2) For text, see *post*, p. 216. (3) For text, see *post*, p. 133.

(4) Viz., metallurgy, silver lead assaying, manufacture of accumulators, glass works, manufacture of lead enamels—their application, manufacture of pottery, decoration of porcelain or earthenware, chromo lithographic ceramics, manufacture of alloys, oxides lead salts and colours.

(5) Reg. 2.

(6) Reg. 3.

(7) Para. 5.

(8) Para. 4. Compare para. 7.

Overalls must be supplied and kept in a satisfactory condition.<sup>(1)</sup> Lavatories and cloakrooms must be provided separate and distinct from rooms in which lead dust or fumes are liberated, and must contain water, soap and towels.<sup>(2)</sup> Lock-up cupboards or lockers must be provided.<sup>(3)</sup>

A warm bath or shower bath must be available once a week, and in the case of the persons engaged in the occupations indicated in para. 11 once a day.<sup>(4)</sup> Medical aid must be provided, medical examinations and reports made.<sup>(5)</sup> The notices indicated in para. 12 must be posted. The bringing into the workshops of any food or drink is prohibited.<sup>(6)</sup>

*Medical examination.*—No person may commence work in these operations unless provided with a certificate issued by the medical man certifying that he shows no symptoms of lead poisoning or of any illness which is liable to be dangerously aggravated by lead poisoning, and this certificate must be renewed one month after engagement and afterwards once a quarter.<sup>(7)</sup>

A register of illnesses, stating particulars indicated in para. 17 must be kept. Limited exemptions may be granted in certain circumstances from the provisions of this Decree.<sup>(8)</sup>

In addition to the above particular provisions, the Decree, dated the 10th July, 1913, relating to health regulations made in conformity with Book 2 of the Code of Labour, contains numerous provisions relating to health and safety, and in particular provides for the exhaustion of dust and vapours,<sup>(9)</sup> and the ventilation of workshops.<sup>(9)</sup>

The grinding of irritating or poisonous substances or other operations, such as the sifting or packing into barrels of such substances, is also required to be carried out mechanically in closed appliances.<sup>(10)</sup>

*Restrictions on employment.*—By a Decree of the 21st March, 1914, lead work of certain kinds is made a prohibited occupation for women and children.

### (13) Germany.

Regulations were made on the 13th December, 1912, for spelter works,<sup>(11)</sup> and on the 16th June, 1905, for lead smelting works.<sup>(12)</sup>

It is not proposed to consider the former, as it is not clear to what extent the regulations are designed to prevent plumbism, but from regulation 12 it would appear that plumbism is one of the principal evils aimed at, though other dangers incident to the extraction of zinc from zinc ores are not excluded.

(<sup>1</sup>) Para. 9.

(<sup>2</sup>) Para. 10.

(<sup>3</sup>) *Ibid.*

(<sup>4</sup>) Para. 11.

(<sup>5</sup>) Para. 13, 14, 16.

(<sup>6</sup>) Para. 8.

(<sup>7</sup>) Para. 16.

(<sup>8</sup>) Para. 18.

(<sup>9</sup>) Reg. 6. For text, see *post*, p. 138.

(<sup>10</sup>) *Ibid.*, Reg. 6. See also Reg. 7 with regard to the condensation or destruction of vapours, disagreeable or injurious gases or dust

(<sup>11</sup>) For text, see *post*, p. 163.

(<sup>12</sup>) For text, see *post*, p. 157.

As to the regulations for lead smelting works, these regulations apply, even though the works are engaged in the manipulation of the substances to which the Order of the 27th January, 1920, applies.<sup>(1)</sup>

*Prevention of dust.*—Rooms must be well ventilated, have good air spaces, and be provided with a level or solid floor to allow the removal of dust by a moist method.<sup>(2)</sup> The walls must be smooth, so as to prevent collection of dust.<sup>(2)</sup> Floors must be wet cleaned once daily.<sup>(3)</sup> Arrangement for sprinkling the floors must be provided near the furnaces.<sup>(3)</sup>

Crushing, unless done moist, must not be done except in apparatus so arranged as to prevent the penetration of dust into work-rooms.<sup>(4)</sup> Sacks must be freed from dust in a dust-proof apparatus or by washing.<sup>(4)</sup>

Dusty lead oxides for charging the blast furnaces must be damped before mixing, stacking or charging.<sup>(5)</sup>

Dust, gases and lead fumes escaping from furnaces, converters and tapping spouts, tapping pots, drain sump, slag pots, slag cars, or slag channels, and from glowing residues taken from the furnaces, shall be caught as near as possible to the point of origin and removed harmlessly.<sup>(6)</sup>

Dust collecting chambers, flues, as well as furnaces, which have been blown down may not be entered by workmen unless sufficiently cooled and ventilated.<sup>(6)</sup>

Where lead colours are prepared, the operations in which leady dust is developed exhaust arrangements must be provided for preventing the entrance of lead dust into the workroom.<sup>(7)</sup>

*Cleanliness, etc.*—For the operations indicated in Reg. 14 working clothes, including caps and respirators, must be provided.<sup>(8)</sup> Work involving the contact of the hands in the solution containing lead salts must not be done unless the worker has been provided with impermeable gloves or has greased his hands.<sup>(9)</sup>

Overalls must be cleaned once a week at least, and respirators and gloves prior to use.<sup>(10)</sup>

A lavatory, cloakroom and mealroom must be provided.<sup>(11)</sup> These must be kept free from dust and warmed.<sup>(11)</sup> A place for keeping overalls must be supplied, and in the lavatory there must be water, soap and towels.<sup>(11)</sup>

Facilities must be available for persons engaged in certain operations<sup>(12)</sup> to take a bath daily, and for others to take a bath once a week.<sup>(12)</sup>

(1) Order of 27th January, 1920, Reg. 1 (a).

(2) Reg. 1.

(3) Reg. 2.

(4) Reg. 3.

(5) Reg. 4.

(6) Reg. 5.

(7) Reg. 6, *see also* Reg. 7.

(8) Reg. 14, *see also* Reg. 16.

(9) Reg. 15, *see also* Reg. 16.

(10) Reg. 16.

(11) Reg. 17.

(12) *See* Reg. 17.

Workmen are required to take off their overalls, carefully wash their face and hands before taking their meals or leaving the factory.<sup>(1)</sup> Food must not be taken into the workrooms.<sup>(2)</sup> Cigar and cigarette smoking is forbidden.<sup>(3)</sup>

*Medical examination.*—A monthly examination is required.<sup>(4)</sup> The worker may be suspended permanently in certain circumstances.<sup>(4)</sup>

A health register must be kept.<sup>(5)</sup>

*Restrictions on employment.*—Women and young persons may not be employed or permitted in rooms mentioned in Regulation 1, in flue dust chambers, in dust flues, or in the removal of flue dust.<sup>(6)</sup>

A certificate of fitness is required for certain employments.<sup>(7)</sup> Hours of labour are restricted in respect of certain employments.<sup>(8)</sup>

#### (14) Russia.

Regulations were made in 1909.<sup>(9)</sup> These regulations do not call for detailed examination, as they are primarily concerned with medical examination and supervision,<sup>(10)</sup> limited restrictions on employment,<sup>(11)</sup> and simple provisions with regard to the provision of lavatories, cloakrooms, messrooms, etc.<sup>(12)</sup>

By Regulation 5 an ample supply of drinking water must be provided in work places, and must be kept free from all impurities, and must be available in a room which the workmen can enter without going out of doors.

Regulations relating to the manufacture of lead preparations including red lead were made in 1913. These are considered under group 3.

#### (15) Austria.

Regulations were made in 1908.<sup>(13)</sup>

*Prevention of Dust, etc.*—Provision is made in Regulation 1 for the prevention of the dissemination of gases and vapours and for the proper ventilation of rooms where the various processes indicated in Regulation 2 are carried on. In order to prevent the accumulation of dust there must as far as possible be no sills or recesses in the workrooms.<sup>(14)</sup>

The floors of the rooms indicated in paragraph 2 must be level and firm, and must be constructed with concrete, iron plates,

<sup>(1)</sup> Reg. 20 (2).

<sup>(2)</sup> Reg. 20 (1).

<sup>(3)</sup> Reg. 20 (4).

<sup>(4)</sup> Reg. 18.

<sup>(5)</sup> Reg. 19.

<sup>(6)</sup> Reg. 11.

<sup>(7)</sup> Reg. 12.

<sup>(8)</sup> Reg. 13.

<sup>(9)</sup> For text, *see post*, p. 221. The Regulations of 1913 dealing with the manufacture of various lead compounds are considered under Group 3.

<sup>(10)</sup> Regs. 3 and 4.

<sup>(11)</sup> Reg. 2.

<sup>(12)</sup> Regs 6 and 7.

<sup>(13)</sup> For text, *see post*, p. 183.

<sup>(14)</sup> Reg. 2.

tiles or similar material from which dust may be easily removed by a wet process.<sup>(1)</sup> Floors must be kept in a damp condition, and must be cleaned once a day.<sup>(1)</sup>

Special provision is made for the prevention of the accumulation of dust on walls.<sup>(1)</sup> Numerous provisions exist for the prevention of the escape of dust or gases and for the damping of materials during casting, heating, grinding, removing or packing of lead or lead substances. The regulations in these particulars are perhaps fuller than those of any other country.<sup>(2)</sup>

For the purposes of investigating the contents of the air in certain parts of the works, specimens thereof must, on the special order of the mining authority, be taken and analysed by suitable persons for the purpose of ascertaining the amount of lead it contains either in special cases or at stated intervals.<sup>(3)</sup> A current record must be kept of such analyses, which must be produced to the mining authority or his representative on demand.<sup>(4)</sup>

*Cleanliness, etc.*—Working clothes must be provided<sup>(5)</sup> for workmen engaged in dusty lead processes.<sup>(5)</sup> These must consist of trousers, cap, and where hygienic considerations require, gloves.<sup>(5)</sup>

Respirators must be supplied for workmen employed in cleaning out condensing chambers or conduits or in similar occupations of an exceptionally dusty nature.<sup>(5)</sup>

There are the usual provisions for keeping these articles clean and in proper condition and for storing.<sup>(6)</sup>

Special lavatories, bathrooms, cloakrooms, messrooms must be supplied away from dust and in a clean condition.<sup>(7)</sup> Hot water must be available, also shower baths. Water, glasses, nailbrushes and soap must be kept in readiness in bathrooms.<sup>(7)</sup>

Workmen before taking a meal and at the end of the shift must thoroughly clean their hands, face, mouth and teeth in the washing rooms.<sup>(8)</sup> When employed in the occupations indicated in Regulation 13, paragraphs 3 and 4, workers engaged must take a daily bath.<sup>(9)</sup> Workers employed in a smelting works must take a bath at least once a week.<sup>(9)</sup> Where bathing is compulsory the workmen must be given a clean towel at least once a week.<sup>(10)</sup>

Provision is made for the exemption of workmen where it is medically certified that bathing is unsuited to them.<sup>(9)</sup>

The workmen must not take food or drink into the workrooms.<sup>(11)</sup> Meals must be taken in the messroom.<sup>(11)</sup> Cigars

<sup>(1)</sup> Reg. 3.

<sup>(2)</sup> Regs. 4-10.

<sup>(3)</sup> Reg. 11.

<sup>(4)</sup> *Ibid.*

<sup>(5)</sup> Reg. 14.

<sup>(6)</sup> Reg. 15, 16.

<sup>(7)</sup> Reg. 16.

<sup>(8)</sup> Reg. 20 (3).

<sup>(9)</sup> Reg. 20 (4).

<sup>(10)</sup> Reg. 16.

<sup>(11)</sup> Reg. 20 (2).



and cigarettes must not be smoked in any workroom.<sup>(1)</sup> Pipes must not be smoked or tobacco chewed during the following processes :—clearing out condensing chambers and conduits, cleaning and breaking up furnaces, working at American furnaces, distilling zinc, sifting, grinding or packing litharge or other products containing lead.<sup>(1)</sup>

*Medical Examination.*—A preliminary medical examination before employment is required.<sup>(2)</sup> After employment examination must take place once a month as regards persons employed at the apparatus and in the occupations named in Regulation 3.<sup>(3)</sup> In other occupations a quality examination is required.<sup>(3)</sup>

Provision is made for suspension.<sup>(3)</sup> A health register must be kept showing the particulars indicated in Regulation 19, and is open to inspection.<sup>(4)</sup>

*Restrictions on Employment, etc.*—A person found medically unsuited to the work offered may not be employed.<sup>(5)</sup> Women of any age and males under eighteen may not be employed in the rooms specified in Regulation 2 or in the various processes or places indicated in Regulation 12.<sup>(6)</sup>

Numerous restrictions are imposed upon the number of hours which may be worked, such restrictions varying with the processes.<sup>(7)</sup>

Workmen must be instructed in a suitable manner in the nature and symptoms of lead poisoning, and in the methods whereby they can protect themselves against such poisoning.<sup>(8)</sup>

## **(16) Belgium.**

The lead-smelting industry in Belgium does not appear to be subjected to any special regulations. The regulations, dated November 5th, 1910, relating to the manufacture of white lead, lead oxides, and lead chromates will be considered under Group 3.

By Royal Order of 19th July, 1911, provision was made for the inspection of dangerous, unhealthy, or injurious premises.

## **(17) Switzerland.**

No special regulations exist, but under the Ordinance of the 3rd October, 1919, women and young persons are excluded from work which exposes them to the serious risk of poisoning.<sup>(9)</sup> There is also to be found a wide general regulation in the Federal Law of the 18th June, 1914, which provides that, with a view to prevent sickness and accidents, employers must take all protective measures which experience has shown to be necessary and which the progress of science and the circumstances of the case permit to be employed.

(1) Reg. 20 (5).

(4) Reg. 19.

(7) Reg. 13.

(2) Reg. 18.

(3) Reg. 18.

(5) Reg. 23.

(3) Reg. 18.

(6) Reg. 12.

(9) Art. 183 (9), Art. 189 (12).

**(18) Netherlands.**

No special regulations exist, but the Safety Decree of the 21st August, 1916, applies, and by Article I of Chapter I of this Decree lead-smelting works are included in category A, and the provisions of the Decree relating to works in category A consequently apply. By a Decree of 6th December, 1911, lead poisoning is made a notifiable disease.<sup>(1)</sup>

**(19) Sweden.**

There are no special regulations, but the Labour Act, passed the 29th June, 1912, provides that effective arrangements must be made so far as the nature of the work may permit to prevent dust, gases, smoke or vapours from spreading in the workshops to such an extent as to injure the worker's health.<sup>(2)</sup>

The sweeping of a workshop in such a manner as to cause the spread of dust must be avoided as far as possible whenever work is in progress.<sup>(3)</sup>

**(20) Poland.**

No specific provisions are made with regard to the manner in which the lead processes are to be carried on, but by Order of the Ministry of Public Health dated 20th September, 1920, every case of lead poisoning occurring in an industrial establishment, factory or workshop, and every case of illness suspected of having been caused by lead poisoning must be notified. Provision is also made for the person who is sick to be visited for the purpose of verifying the cause of poisoning and tracing its origin.

**(21) Czecho-Slovakia.**

Children may not be employed in lead processes.<sup>(4)</sup>

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## CHAPTER III.

**Group 3.—White Lead.**

In Great Britain the regulations relating to white lead have been marked by a notable diminution in the case rate of lead poisoning amongst the employes, so much so, in fact, that this industry has been turned from one of the most dangerous to a comparatively safe industry. As was observed in the article on lead poisoning in Illinois, which appears in the pamphlet of the first Conference on Industrial Diseases in 1910, an inquiry into the lead industries did disclose the fact that "the most dangerous

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(1) See Bulletin of the International Labour Office, Vol. VII., Nos. 11-12, p. xiv.

(2) Section 5 (c).

(3) Section 5 (j').

(4) Child Labour Act, 17th July, 1919.

were lead smelting and the making of white lead, although the litho-transfer work, the dry colour work, the making of storage batteries come very close to them.”<sup>(1)</sup> Despite this fact, the average number of cases in the white-lead industry during the years 1900-1919 in Great Britain has been reduced as follows :—

1900-04	...	...	...	...	...	183
1905-09	...	...	...	...	...	76
1910-14	...	...	...	...	...	31
1915-19	...	...	...	...	...	17

### (1) Great Britain.

Codes of special rules have been established under the Factory and Workshops Acts, 1891, 1895.<sup>(2)</sup> Under these rules the following duties are imposed upon occupiers<sup>(3)</sup> :—

*Prevention of dust and fumes, etc.*—New factories must be in conformity with approved plans. The steps indicated in Rules 2 and 3 for the damping of dust must be taken. Corrosions must not be carried except in trays of impervious material and subject to the restrictions imposed by Rule 4 (b), and before being put into rollers or washbecks must be damped.<sup>(4)</sup>

The flooring round the rollers must either be of smooth cement or covered with sheet lead. It must be kept constantly moist.<sup>(5)</sup>

Special provisions are made with regard to the ventilation and drawing of stoves and the stacking of bowls.<sup>(6)</sup> When dry white lead is deposited, it must be deposited in a place either having a cover or provided with an exhaust fan which will remove the dust away from the worker.<sup>(7)</sup>

The packing of dry white lead must be done under conditions which secure the effectual removal of dust,<sup>(8)</sup> and the floor of the packing place must be of cement or of stone set in cement.<sup>(9)</sup>

*Cleanliness, etc.*—The occupier is required to provide and maintain sufficient and suitable respirators, overalls and head-coverings.<sup>(10)</sup> These articles must be kept in a special place<sup>(10)</sup> and thoroughly washed and renewed every week,<sup>(10)</sup> or, in the case of respirators, every day,<sup>(10)</sup> or, in the case of overalls or head-coverings used in the stoves, every day.<sup>(10)</sup> A dining room and cloak room,<sup>(11)</sup> a lavatory, soap, nail brushes and clean towels,<sup>(12)</sup> baths and dressing rooms<sup>(13)</sup> must be provided.

No person employed in a lead process is allowed to prepare or partake of any food or drink except in the dining room or kitchen,<sup>(14)</sup> and the employes must be allowed 10 minutes over in addition to the regular meal times for washing and a further 10 minutes at the end of the day.<sup>(15)</sup>

<sup>(1)</sup> See *Op. Cit.* p. 29.

<sup>(2)</sup> For text, see *post*, p. 66.

<sup>(3)</sup> Rules 1 and 2.

<sup>(4)</sup> Rule 4.

<sup>(5)</sup> Rule 5.

<sup>(6)</sup> For details see Rule 6.

<sup>(7)</sup> Rule 8.

<sup>(8)</sup> Rule 9.

<sup>(9)</sup> Rule 10.

<sup>(10)</sup> Rule 14.

<sup>(11)</sup> Rule 15.

<sup>(12)</sup> Rule 18.

<sup>(13)</sup> Rules 20 and 21.

<sup>(14)</sup> Rule 16.

<sup>(15)</sup> Rule 19.

The floors of workrooms must be cleaned daily after being thoroughly damped. Suitable sanitary arrangements must be supplied for the workers.

*Medical examination.*—No person may be employed in a lead process for more than a week without a certificate of fitness,<sup>(1)</sup> or after suspension without the written sanction of the appointed surgeon.<sup>(2)</sup> Provision is made for medical examination once a week,<sup>(3)</sup> and a health register must be kept.<sup>(4)</sup> If an employé complains of illness he or she must be given an order upon duly qualified medical practitioner.<sup>(5)</sup>

*Restrictions on employment.*—Restrictions are placed upon the employment of women,<sup>(6)</sup> and no person may be employed in drawing Dutch stoves on more than two days in any week.<sup>(7)</sup>

*Duties of persons employed.*—(1) Operatives are required to carry out their operations in the manner provided in the Regulations<sup>(8)</sup>; (2) they are required to present themselves for medical examination,<sup>(9)</sup> and are forbidden after suspension to work without written sanction<sup>(10)</sup>; (3) persons engaged in the operation or placed indicated in Rule 29 or in any work involving exposure to white lead dust, are required to wear an overall suit or head-covering<sup>(11)</sup>; persons engaged in stripping white beds, emptying chambers, drawing stoves or packing must also wear a respirator<sup>(11)</sup>; (4) persons employed are required to deposit their protective coverings as directed, to thoroughly wash and bath as directed and sign the bath register with date<sup>(12)</sup>; (5) smoking and using tobacco is forbidden, as is eating or drinking elsewhere than in the dining room or kitchen<sup>(13)</sup>; (6) interference with the means and appliances provided for the removal of dust without authority is forbidden. Foremen are required to notify breaches of rules and no person is permitted to obtain employment under an assumed name or under any false pretences.<sup>(14)</sup>

## (2) New South Wales.

Under the Factories and Shops Act of 1912, Schedule 2, it is provided that a person under the age of 18 shall not be employed in the process of making white lead.

## (3) Victoria.

The provisions already considered under Group 2<sup>(15)</sup> apply also to the manufacture of white lead.

(1) Rule 12 (*b*).

(4) Rule 12 (*e*).

(7) Rule 7.

(10) Rule 28.

(13) Rule 32.

(2) Rule 12 (*d*).

(5) Rule 13.

(8) Rules 23–26.

(11) Rule 29.

(14) Rules 33, 34, 35.

(3) Rule 12 (*a*), (*c*).

(6) Rule 11 and see p. 57.

(9) Rule 27.

(12) Rules 30, 31.

(15) See *ante*, p. 12.

**(4) South Africa.**

Under the Factory Act, 1918, Section 20, no boy under the age of 18 years and no female may be employed in the making of white lead.

**(5) India.**

The manufacture of white lead is a scheduled operation under the Indian Factories Act, 1911, and the provisions of Part 2 (already considered, *ante* p. 15) apply.

**(6) France.**

The Decree of the 1st October, 1913,<sup>(1)</sup> already considered under the preceding head<sup>(2)</sup> applies to the manufacture of white lead.

**(7) Germany.**

By Order dated the 27th January, 1920, elaborate Regulations were made for all establishments where the manufacture of lead colours or other lead compounds or mixtures thereof with other substances is carried on either as a principal or subsidiary industry.<sup>(3)</sup>

*Prevention of dust and fumes, etc.*—Very numerous provisions are made with regard to structural requirements,<sup>(4)</sup> the main aim of which requirements is to prevent dust or fumes or the settling of dust, or, where dust or fumes cannot be prevented, to secure that persons shall not be affected thereby, by requiring such dust or fumes to be exhausted or, alternatively, to be kept within mechanical appliances.

Damping occupies a prominent position. Exhaust ventilation is required in most of the more dangerous processes. Mechanical appliances for filling and emptying red lead furnaces are made compulsory after 1924.

The Regulations with regard to white lead are such as to reduce the handling of dry white lead to a minimum. In the oxidation chamber it is damped by steam. During the transference to the grinding room, the crude white lead must be kept damp.<sup>(5)</sup> It may not be ground in a dry state, but only in the form of paste.<sup>(6)</sup> Where dry white lead is to be packed, it must be packed by mechanical appliances except in certain exceptional circumstances.<sup>(7)</sup> In grinding and wet grinding generally hand work is reduced to a minimum.<sup>(8)</sup>

*Cleanliness, etc.*—The employer is required to provide certain protective coverings, including cap, working suit, and, in certain circumstances, footwear and also respirators.<sup>(9)</sup> Such protective

<sup>(1)</sup> For text, *see post*, p. 133.

<sup>(2)</sup> *See ante*, p. 18.

<sup>(3)</sup> Reg. 1. *See post*, p. 139. Observe the exceptions contained in these Regulations.

<sup>(4)</sup> *See* Regs. 2-8.

<sup>(5)</sup> Reg. 5.

<sup>(6)</sup> Reg. 9.

<sup>(7)</sup> Reg. 8.

<sup>(8)</sup> Reg. 6.

<sup>(9)</sup> Regs. 13, 14, 15.

appliances must be kept clean and in good condition, must be worn in the circumstances indicated and must be kept in the proper receptacle when not in use. Provision is made for lockers and for changing rooms.<sup>(1)</sup>

Special provision is also made for the supply of lavatory conveniences and meal rooms. These proceed on lines similar to those in England and France, but there is the added requirement of a vessel for rinsing the mouth, though there is no requirement for a bath register.<sup>(1)</sup> In certain circumstances a daily bath is required to be taken, in other cases a bath must be taken twice a week.<sup>(1)</sup>

Instructions are required to be given by the employer to the employé as to precautions to be taken.<sup>(2)</sup>

The usual provisions are to be found against bringing intoxicating liquor on the premises, the taking of meals outside the meal room and smoking, taking snuff or chewing.<sup>(3)</sup> Before a worker may take a meal or leave the works, he is required to remove his working clothes, free his hair from dust, carefully wash his hands and face and rinse out his mouth. A certain fluidity is given to the Regulations by enabling the higher administrative authority in certain circumstances to authorise exceptions<sup>(4)</sup>; on the other hand the competent authorities are given power to make more stringent regulations.<sup>(5)</sup>

*Medical examination.*—Provision is made for the examination and supervision of the health of the workers both before and during employment.<sup>(6)</sup> Periodical examinations are required.<sup>(6)</sup> An employé may be suspended.<sup>(6)</sup> A health register containing the particulars indicated in Regulation 18 must be kept.

*Restrictions on employment.*—Women and persons under 18 years of age are excluded from certain forms of employment.<sup>(7)</sup>

The hours of labour are reduced in the case of certain occupations.<sup>(8)</sup>

Notice of the Regulations must be affixed in a conspicuous place in each work-room, cloak-room and mess-room.<sup>(9)</sup>

### (8) Belgium.

By Order dated the 5th November, 1910, Regulations were made relating to the manufacture of white lead, the lead oxides and lead chromates. These Regulations are divisible into four parts:—

- (1) regulations dealing with the manufacture of all these lead compounds;
- (2) regulations dealing with white lead;
- (3) regulations relating to the manufacture of lead chromates and the colours contained therein;
- (4) regulations relating to the manufacture of lead oxides.

<sup>(1)</sup> Reg. 16.

<sup>(2)</sup> Reg. 11. The employer must supply his employés with copies of the lead notices the text of which is to be found *post* p. 147.

<sup>(3)</sup> Reg. 19.

<sup>(4)</sup> Reg. 21, 22, 23, 27.

<sup>(5)</sup> Reg. 24.

<sup>(6)</sup> Reg. 17. For the text of the instructions for the medical examination and supervision of the health of workers, *see post*, p. 148.

<sup>(7)</sup> Reg. 10.

<sup>(8)</sup> Reg. 12.

<sup>(9)</sup> Reg. 25.

*Prevention of dust and fumes, etc.*—In all cases operations are required to be conducted in roomy well ventilated places illuminated by daylight.<sup>(1)</sup>

The floors must be smooth and impervious and must be kept in good condition and supported to avoid vibration.<sup>(2)</sup>

Floors, apparatus and utensils must be thoroughly cleaned every day with a hose.<sup>(3)</sup>

Walls, timber works and other places where dust may settle must be cleaned weekly.<sup>(4)</sup> Dry cleaning is forbidden.<sup>(4)</sup>

There are general provisions directed against the production and dissemination of dust.<sup>(5)</sup> Towels must be kept clean.<sup>(6)</sup> An arrangement for the trapping of exhausted dust is required.<sup>(7)</sup>

In the case of the manufacture of **white lead** the following special provisions apply :—

- (1) melting must be done in a special room under a hood to protect the founder against fumes.<sup>(8)</sup> During the running of the lead the hood must have an opening only sufficient for this operation, and during the recasting of grids, fins, scraps, etc., it should be possible to close the hood or lower it to the mouth of the mould.<sup>(9)</sup> Provision is made for the exhausting of fumes beneath the hood.<sup>(6)</sup>
- (2) Grids, fins and rubbish must be removed without producing dust and must be damped if necessary.<sup>(10)</sup> Hand picking, cleaning and sifting is forbidden.<sup>(11)</sup>
- (3) Elaborate precautions have to be taken to avoid the creation or scattering of dust.<sup>(12)</sup>
- (4) Workmen are not allowed to enter the drying ovens for the purpose of withdrawing dry white lead until the ovens have been ventilated and cooled down.<sup>(13)</sup>
- (5) In the course of the handling of white lead the contact of the hand with this material or splashes of it is forbidden.<sup>(14)</sup>

Special regulations are made with regard to the manufacture of **lead oxides** (massicot, litharge, minium) :—

- (1) Ovens must be erected either in the open air or in spacious and well ventilated positions.<sup>(15)</sup>
- (2) Special precautions must be taken to avoid exposure to vapours and dust.<sup>(16)</sup> If the ovens are not erected in the open air, suction hoods of high vacuum must be arranged above the bars.<sup>(15)</sup>
- (3) When diluting with water, crushing and withdrawing the massicot from the storage vessels, all contact with the lead oxides with the hands must be avoided.<sup>(17)</sup> Necessary precautions must be taken to prevent splashing.<sup>(17)</sup>

<sup>(1)</sup> Reg. 2 (1).

<sup>(2)</sup> Reg. 2 (2).

<sup>(3)</sup> Reg. 2 (3).

<sup>(4)</sup> Reg. 2 (3).

<sup>(5)</sup> Reg. 2 (4).

<sup>(6)</sup> Reg. 2 (5).

<sup>(7)</sup> Reg. 2 (6).

<sup>(8)</sup> Reg. 3 (1).

<sup>(9)</sup> *Ibid.*

<sup>(10)</sup> Reg. 3 (a) (2).

<sup>(11)</sup> Reg. 3 (a) (3).

<sup>(12)</sup> For details, see Regs. 3, 5, 6, 8, 9, 10, 11.

<sup>(13)</sup> Reg. 3 (a) (7).

<sup>(14)</sup> Reg. 3 (a) (4).

<sup>(15)</sup> Reg. 3 (b) (1).

<sup>(16)</sup> Reg. 3 (b) (2).

<sup>(17)</sup> Reg. 3 (b) (3).

- (4) Pulverisation and sieving must be effected in hermetically closed apparatus.<sup>(1)</sup> These must not be opened until sufficient time has elapsed for the dust to settle.<sup>(1)</sup>
- (5) Decanting, barrelling and heaping-up operations must be done so as to avoid the dissemination of dust.<sup>(2)</sup>

The following special regulations relate to the manufacture of **lead chromate** and lead colours contained therein :—

- (1) In all operations by wet process measures must be taken so that the workmen may avoid touching the material with the hands and are protected from splashes.<sup>(3)</sup>
- (2) Pulverisation, screening, heaping-up and packing must be done under conditions which prevent the escape of dust.<sup>(4)</sup>

*Cleanliness, etc.*—Overalls must be worn.<sup>(5)</sup> The overall must be washed once a week.<sup>(5)</sup> Contact between the hands and lead products, particularly in the case of wet processes, is prohibited.<sup>(6)</sup>

Cloakrooms must be provided, working clothes being kept separate from ordinary clothes.<sup>(7)</sup>

Lavatories must be provided with fresh running water and special nail brushes, clay sand and clean towels and drinking glasses.<sup>(8)</sup> Shower baths must also be provided.<sup>(8)</sup>

Before eating, working clothes must be taken off, hands, neck and face must be washed, the mouth rinsed, and all dust removed from the hair.<sup>(9)</sup>

Before leaving work a tepid shower bath must be taken.<sup>(9)</sup>

A special dining room must be provided.<sup>(10)</sup>

Workmen are not allowed to deposit food or eat or drink in the works except in the dining room.<sup>(11)</sup>

Provision is made that sanitary arrangements must be kept very clean, in good condition, well ventilated and heated.<sup>(12)</sup>

Special obligations are imposed upon workmen having for their purpose the carrying out of these regulations.<sup>(13)</sup>

No workman may introduce and consume spirits in the works.<sup>(14)</sup>

*Medical Examination.*—A monthly medical examination is required in the case of workmen engaged in the manufacture of lead compounds.<sup>(15)</sup> Provision is made for permanent or temporary suspension.<sup>(15)</sup> A special register must be kept and must be open to inspection.<sup>(15)</sup> Workmen must submit to medical examination.<sup>(16)</sup>

*Restrictions on Employment.*—Workmen addicted to drink may not be employed.<sup>(17)</sup>

(1) Reg. 3 (b) (4).

(2) Reg. 3 (b) (5).

(3) Reg. (3) (c) (1).

(4) Reg. 3 (c) (2).

(5) Reg. 2 (7).

(6) Regs. 2 (4), 3 (a) (3), 3 (a) (4), 3 (b) (3), 3 (c) (1).

(7) Reg. 2 (8).

(8) Reg. 2 (9).

(9) Reg. 2 (10).

(10) Reg. 2 (11).

(11) Reg. 2 (13).

(12) Reg. 2 (12).

(13) Regs. 1-5.

(14) Reg. 5 (6).

(15) Reg. 2 (14).

(16) Reg. 5 (7).

(17) Reg. 2 (15).



Numerous penalties are imposed for infractions of the above regulations.<sup>(1)</sup>

Regulations must be posted in a prominent position.<sup>(2)</sup>

### (9) Russia.

Regulations were made in 1913.<sup>(3)</sup> These regulations relate to the manufacture of lead preparations, white lead, acetate of lead, red lead, etc.

*Prevention of dust and fumes, etc.*—Ceilings, floors and walls must be either washable or be cleansed from all dust or white-washed twice a year.<sup>(4)</sup> They must be maintained in a thoroughly clean condition.<sup>(4)</sup>

Floors must be impervious, must be cleaned daily and while damp or by a damp method.<sup>(4)</sup>

Provision must be made for proper exhaust, provision of hoods, and ventilation of the furnaces and the places where lead products are cast.<sup>(5)</sup>

Mechanical means are required for the various operations indicated in Regulation 4 with a view to the prevention of the escape of dust.<sup>(6)</sup>

The conveyance, transfer and store of all manufacturing products both the final and intermediate products must be carried out in such a manner so as not to produce any dust.<sup>(7)</sup>

Chambers used in the process for the manufacture of white lead and the laths at the time when the sheets of lead are hung up must be kept in a moist condition.<sup>(8)</sup> At the end of the process and the time when the workmen enter the chambers, these must be cooled, aired and moistened to prevent the spread of dust during the emptying process.<sup>(8)</sup>

Hand operations in the processes mentioned in Regulation 7 are forbidden.

Special provision is made for the ventilation of the sifting apparatus and the apparatus for the grinding of white lead, and for the prevention of dust therefrom.<sup>(9)</sup>

In processes from which lead dust is given off the workers are required to wear respirators which cover their noses and mouths and which must be washed and disinfected daily and stored in a special locked room.<sup>(10)</sup>

*Cleanliness, etc.*—Overalls, trousers and head coverings must be supplied,<sup>(11)</sup> and workers engaged in emptying white lead chambers must wear foot coverings also.<sup>(11)</sup> Except as regards foot coverings, these articles must be washed once a week.<sup>(11)</sup>

Sifting must be done by means of brushes.<sup>(12)</sup>

(1) Regs. 7, 8, 9.

(4) Reg. 2.

(7) Reg. 11.

(10) Reg. 18.

(2) Reg. 6.

(5) Reg. 3.

(8) Reg. 6.

(11) Reg. 17.

(3) For text, *see post*, p. 222.

(6) Regs. 4, 5, 8, 10.

(9) Reg. 9.

(12) Reg. 19.

Lavatories and dressing rooms must be provided in a part where dust cannot penetrate.<sup>(1)</sup>

There are the usual provisions with regard to cleanliness and heating:<sup>(1)</sup> the supply of water, soap, towels and brushes. A lotion must also be supplied, and there is a novel provision that the lavatories must be so situated that after washing the workers need not pass through workrooms or through rooms where working clothes are stored. Working clothes and ordinary clothes must be kept separate.<sup>(1)</sup>

Baths must be supplied and the workers must be permitted to take a bath once a week and more often if required.<sup>(2)</sup>

Hot water must be provided for rinsing the mouth<sup>(3)</sup> and good drinking water must be supplied and must be kept in hermetically sealed receptacles through which no dust can penetrate.<sup>(4)</sup>

Special dining rooms must be provided, and there are the usual provisions against eating or drinking elsewhere or without washing.<sup>(5)</sup>

*Medical examination, etc.*—A medical examination before engagement is compulsory.<sup>(6)</sup> The health of the workers is subject to constant supervision by a medical man, and they must be examined at least twice a month.<sup>(7)</sup>

Provision is made for temporary or permanent suspension.<sup>(7)</sup> A medical register recording the information required in Regulation 15 must be kept.<sup>(8)</sup>

Preventive medicines may only be given by the medical man's prescription.<sup>(9)</sup>

*Restrictions on employment.*—Persons under 15 years of age cannot be employed.<sup>(10)</sup> Females and minors between 15 and 17 are only allowed to be employed on work in which they are not exposed to the action of lead dust, gases or fumes, and do not come into contact with substances containing lead.<sup>(10)</sup> In certain circumstances the hours of labour are restricted.<sup>(11)</sup> The restrictions vary with the process.

## (10) Netherlands.

Workrooms where white lead, sugar of lead, oxide of lead (litharge) or red lead is prepared fall within category A for the purposes of the Safety Decree of the 21st August, 1916.

(1) Reg. 20.

(4) Reg. 21.

(7) Reg. 14.

(10) Reg. 12.

(2) Reg. 22.

(3) Reg. 24.

(8) Reg. 15.

(11) Reg. 16.

(3) Reg. 20.

(6) Reg. 13.

(9) Reg. 23.

## CHAPTER IV.

**Group 4.—Manufacture of Paints and Colours containing Lead.****(1) Great Britain.**

Regulations were made in 1907.<sup>(1)</sup> These regulations aimed primarily at

- (1) the elimination of dust<sup>(2)</sup>;
- (2) the exclusion of women, young persons and children from this class of work<sup>(3)</sup>;
- (3) medical examination.<sup>(4)</sup>

Provision is also made for suspension of persons showing signs of lead,<sup>(5)</sup> keeping of a health register,<sup>(6)</sup> supply of overalls,<sup>(7)</sup> the supply of cloak rooms and dining rooms.<sup>(8)</sup>

There is the usual provision with regard to food, drink and tobacco,<sup>(9)</sup> and the supply of lavatories, soap, nailbrushes and clean towels.<sup>(10)</sup>

The duties imposed on persons employed are designed to give effect to the foregoing provisions,<sup>(11)</sup> and all persons employed in lead processes or at the roller mills are required carefully to clean and wash their hands before leaving the premises or partaking of any food.

**(2) France.**

The decree dated the 1st October, 1913,<sup>(12)</sup> the details of which have already been considered under Group 2,<sup>(13)</sup> apply also to the manufacture of paints and colours containing lead.

**(3) Germany.**

The Order dated the 27th January, 1920,<sup>(14)</sup> already considered under Group 3,<sup>(15)</sup> also applies to the manufacture of paints and colours containing lead.

**(4) Netherlands.**

Workrooms where paints are mixed, worked or used fall within category 13 for the purposes of the Safety Decree of the 21st August, 1916.

**(5) Russia.**

The regulations made in 1913 apply to the manufacture of lead preparations generally. These regulations have been considered under Group 3.<sup>(16)</sup>

<sup>(1)</sup> For text, *see post*, p. 71.

<sup>(4)</sup> Reg. 4.

<sup>(7)</sup> Reg. 7.

<sup>(10)</sup> Reg. 10.

<sup>(12)</sup> For text, *see post*, p. 133.

<sup>(14)</sup> For text, *see post*, p. 139.

<sup>(2)</sup> Regs. 1 and 2.

<sup>(5)</sup> Regs. 4 and 5.

<sup>(8)</sup> Reg. 8.

<sup>(11)</sup> Regs. 11–16.

<sup>(13)</sup> *See ante*, p. 18.

<sup>(15)</sup> *See ante*, p. 27.

<sup>(16)</sup> *See ante*, p. 31.

## CHAPTER V.

**Group 5.—Manufacture and Decoration of Pottery and Majolica  
Painting on Earthenware.****(1) Great Britain.**

Very elaborate regulations were made in 1913.<sup>(1)</sup> These regulations we do not propose to consider in any detail, as many of the provisions are only incidentally concerned with lead poisoning. A critical examination of the regulations will disclose the fact that they aim particularly at the suppression of dust, the cleanliness of the workers and of the workshops, the supply of the usual protective coverings, respirators, etc., and of suitable lavatories, meal rooms, and lockers. Medical examination, etc., is required.

Of these requirements it will, it is believed, be found that the main aim has been to prevent dust where possible. Thus operations are required to be done in a damp state. Workshops, benches, etc., must be moistened or cleaned so as to lay or remove dust. The splashing of lead glaze (which may turn into dust) is forbidden. In cases where the presence of dust cannot be avoided, the regulations aim at protecting the workers from deleterious effects by preventing such dust getting into the worker's system. Such prevention is achieved by the use of overalls and respirators, etc., on the one hand, and by insisting on personal cleanliness on the other hand.

In general, these preventive measures, together with others relating to the taking of meals, requirements as to washing, medical inspection, and the like, follow a course very similar to those already outlined in Groups 2, 3, and 4, and have achieved the very remarkable result of almost eliminating lead poisoning in the pottery industry.

As an example showing how near a connection there is between lead poisoning and dust, it may be observed that the transfer process, admittedly one of the most dangerous, derives its danger solely from dust. In France, as long ago as 1899, it was found that in the works of Messrs. Gerrard and Dufrasseix et Cie the case rate of plumbism, due to the operation known as "poudrage," had been reduced almost to zero by a contrivance whereby the dusting-on process was done in a glass case with a canvas front through which front the operator's arms passed.

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<sup>(1)</sup> For text, *see post*, p. 74.

The dust was thus kept within the glass case, and although the men's arms were constantly exposed to lead dust, the simple protection of washing before leaving the factory or partaking of meals was found to be a sufficient preventive. A weekly medical examination discovered any signs of incipient plumbism, and where such appeared the men were found other work.

These simple precautions in an extremely dangerous lead process were, as we have said, efficacious, no serious case of plumbism having occurred for many years at that particular company's factory.

In Great Britain satisfactory results have been achieved by stringent regulations. Efforts were made in 1894, 1898, 1901, and 1903 to formulate rules which would stop lead poisoning.<sup>(1)</sup> The result may be shown as follows:—

Date.	Cases.
1896     ...     ...     ...     ...	432
1897     ...     ...     ...     ...	446
1898     ...     ...     ...     ...	457
1899     ...     ...     ...     ...	249
1900     ...     ...     ...     ...	200
1901     ...     ...     ...     ...	106
1902     ...     ...     ...     ..	87
1903     ...     ...     ...     ...	97
1904     ...     ...     ...     ...	106
1905     ...     ...     ...     ...	84
1906     ...     ...     ...     ...	107
1907     ...     ...     ...     ...	103
1908     ...     ...     ...     ...	117
1909     ...     ...     ...     ...	58

It will be seen that in 1898 the case rate was practically halved, and in 1901 it was again halved. In 1906 it increased, but the increase may, at least to some extent, possibly be attributed to the passing of the Workmen's Compensation Act of that year, which scheduled lead poisoning as an industrial disease.<sup>(2)</sup> In 1913 even more elaborate regulations were made, and the average number of cases for the years 1915-19 was only 19, as contrasted with an average of 67 for the quinquennial period 1910-14.

<sup>(1)</sup> See Report of Departmental Committee on The Use of Lead in the Manufacture of Earthenware and China. Cd. 5219, 1910.

<sup>(2)</sup> The Act did not, however, come into effect until July, 1907.

**(2) France.**

The Decree of the 1st October, 1913,<sup>(1)</sup> already considered under Group 2,<sup>(2)</sup> applies to the manufacture of pottery, decoration of porcelain or earthenware and chromolithographic ceramics.

**(3) Netherlands**

Regulations have been made under the Labour Act of the 6th December, 1911, and under the Safety Decree of the 21st August, 1916. By virtue of Chapter I of the latter Decree, workshops in pottery works in which lead is used in excess of a given percentage are placed in category L.

*Prevention of dust, etc.*—Floors must be washable and must be washed at least once a week.

Suitable means must be provided for the drawing off of gases, fumes, and dust.

*Cleanliness.*—Lavatories must be provided with soap, towels, and nailbrushes; baths must be available; suitable cloak-rooms, dressing-rooms, and meal-rooms must also be provided. Overalls are required in certain instances. Time must be allowed for washing.

*Medical examination.*—In certain lead processes, female employees must be examined once in three months.

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(<sup>1</sup>) For text, *see post*, p. 133.

(<sup>2</sup>) *See ante*, p. 18.

## CHAPTER VI.

**Group 6.—Manufacture of Electric Accumulators.****(1) Great Britain.**

Regulations were made in 1903.<sup>(1)</sup>

The obligations imposed are divisible into two groups—duties of occupier and duties of persons employed

*(a) Duties of Occupier.*

*The Prevention of Dust and Fumes.*—The floors of the rooms in which the manipulation of dry compounds of lead is carried on must be impervious and must be kept moist.<sup>(2)</sup> The floors must be washed daily.<sup>(2)</sup> Certain of the most dangerous processes indicated in Regulation 2 must be kept separate from other operations.<sup>(3)</sup>

Special ventilation arrangements must be made in rooms in which casting, pasting or lead burning is carried on.<sup>(4)</sup> Such rooms and those in which plates are formed must be capable of through ventilation and must be provided with windows made to open.<sup>(4)</sup>

Every melting pot must be covered with a hood and shaft so arranged as to remove the fumes and hot air from the work rooms.<sup>(5)</sup> Lead ashes and lead plates must be kept in receptacles specially provided for the purpose.

Where dry compounds of lead have to be manipulated there must be a mechanical appliance capable of either containing or removing the dust.<sup>(6)</sup> Benches at which pasting is done must be covered with sheet lead or other impervious material and must have raised edges.<sup>(7)</sup>

*Cleanliness.*—Overalls must be provided and must be washed or renewed once a week.<sup>(8)</sup> Cloak rooms, dining rooms,<sup>(9)</sup> lavatories with soap, nail brushes and towels,<sup>(10)</sup> and sufficient bath accommodation<sup>(11)</sup> must be provided.

The floors and benches of each work room must be thoroughly cleaned daily.<sup>(12)</sup>

No person is allowed to introduce, keep, prepare or partake of any food, drink or tobacco in any room in which a lead process is carried on.<sup>(13)</sup> A place must be provided in which food brought by the workers may be deposited.<sup>(13)</sup>

*Medical Inspection.*—Persons employed in lead processes must be examined once a month and may be suspended.<sup>(14)</sup> After suspension such person may not be employed in a lead process without written sanction.<sup>(15)</sup>

A health register must be kept.<sup>(16)</sup>

<sup>(1)</sup> See post, p. 105, for text.

<sup>(2)</sup> Reg. 3.

<sup>(3)</sup> Reg. 2.

<sup>(4)</sup> Reg. 1.

<sup>(5)</sup> Reg. 4.

<sup>(6)</sup> Reg. 5.

<sup>(7)</sup> Reg. 6.

<sup>(8)</sup> Reg. 9.

<sup>(9)</sup> Reg. 10.

<sup>(10)</sup> Reg. 12.

<sup>(11)</sup> Reg. 14.

<sup>(12)</sup> Reg. 15.

<sup>(13)</sup> Reg. 11. This regulation does not apply to sanitary drink.

<sup>(14)</sup> Reg. 8 (b).

<sup>(15)</sup> Reg. 8 (c).

<sup>(16)</sup> Reg. 8 (d).

*Restrictions on Employment.*—No woman, young person or child may be employed in the manipulation of dry compounds of lead or in pasting.<sup>(1)</sup>

(b) *Duties of Persons Employed.*

Every person employed in the manipulation of dry compound of lead or in pasting must take a bath at least once a week.<sup>(2)</sup> Every such person is required to wear an overall when so employed.<sup>(3)</sup> Overalls when not being worn must be deposited in the proper place.<sup>(3)</sup>

No person employed in a lead process may leave the premises or partake of meals without previously and carefully cleaning and washing the hands.<sup>(4)</sup>

An obligation is imposed upon persons employed to present themselves for medical examination, abstain from work after suspension,<sup>(5)</sup> and not interfere without authority with the means and appliances for the removal of dust or fumes and for the carrying out of the regulations.<sup>(6)</sup>

(2) **France.**

The Decree of the 1st October, 1913,<sup>(7)</sup> already considered under Group 2<sup>(8)</sup> applies to the manufacture of electric accumulators.

(3) **Germany.**

Regulations were made on the 6th May, 1908.<sup>(9)</sup>

*Prevention of Dust and Fumes.*—The floors of rooms where lead dust is created or where lead or lead compounds become dispersed must be impermeable.<sup>(10)</sup> They must be washed every day after work hours.<sup>(11)</sup> Floor coverings of wood, asphalt or linoleum are forbidden.<sup>(10)</sup>

Special arrangement must be made for ventilation as indicated in Regulation 1.

Line washing of walls and ceilings (or alternatively distempering or painting) is required in the circumstances indicated in Regulation 2.

Lead plate machining rooms must be provided with apparatus capable of drawing off or collecting particles of lead and lead dust.<sup>(12)</sup> Apparatus for the collection of metallic lead dust must be constructed and kept tight so as to prevent the escape of the dust.<sup>(13)</sup>

Lead melting pots must be provided with a conical hood having a good draught.<sup>(14)</sup>

Operations indicated in Regulation 6 which generate dust must be carried on with arrangements for either removing the dust or containing the dust.<sup>(15)</sup>

(1) Reg. 7. and see p. 58. (2) Reg. 20. (3) Reg. 17. (4) Reg. 19.

(5) Reg. 16. (6) Reg. 21. (7) For text, see *post*, p. 133.

(8) See *ante*, p. 18. (9) For text, see *post*, p. 151.

(10) Reg. 2. (11) Reg. 12. (12) Reg. 4.

(13) Reg. 5. (14) Reg. 3. (15) Reg. 6.



Open vessels containing lead or lead compounds must be placed on a grating over a stand surrounded by a rim or so arranged that when the lead dust or lead compounds are taken out of the vessel any scattered substances will be caught into the stand.<sup>(1)</sup>

The operations indicated in Regulation 8 must be carried out in a special room.

Pasting benches must have smooth and grooveless surfaces<sup>(2)</sup> and must be washed once a day.

Lead burning must be carried out in special shops with effective arrangements for drawing off fumes.<sup>(3)</sup>

Workrooms must be kept as free as possible from pollution of lead or lead compounds.<sup>(4)</sup>

*Cleanliness.*—Working clothes and caps must be supplied,<sup>(5)</sup> must be washed at least once a week,<sup>(5)</sup> and kept in suitable places.<sup>(5)</sup> Lavatories, cloak rooms, and separate mess rooms must be provided in a part of the premises free from dust.<sup>(6)</sup> They must be kept free and clean from dust.<sup>(6)</sup>

Water, nail brushes, soap and towels and vessels for rinsing the mouth must be supplied.<sup>(6)</sup>

Every workman must be given the opportunity of taking a warm bath at least once a week.<sup>(6)</sup>

Restrictions are imposed on the bringing of food or drink into the workrooms or on the premises.<sup>(7)</sup> Meals must not be taken in workrooms.<sup>(7)</sup> No workman may enter a mess room, take a meal or leave the premises until he has removed his working clothes, carefully washed his hands and face and rinsed his mouth.<sup>(8)</sup> Smoking, taking snuff and chewing tobacco during work is prohibited.<sup>(9)</sup>

*Medical examination.*—A certificate of fitness is required before employment.<sup>(10)</sup> A qualified medical practitioner must be appointed by the employer to watch over the health of the workmen.<sup>(11)</sup>

Workpeople must be examined once every month.<sup>(11)</sup> If plumbism is apparent, the employé must be suspended.<sup>(11)</sup>

A health register must be kept.<sup>(12)</sup>

*Restrictions on employment.*—No woman or young person may be employed in occupations involving contact with lead or lead compounds.<sup>(13)</sup>

The hours of labour are restricted in the case of workmen engaged in mixing and manufacturing the material used for filling accumulators and applying it to the plates.<sup>(14)</sup>

#### (4) Netherlands.

Workrooms in which electric accumulators are manufactured or repaired are placed in category A for the purposes of the Safety Act of 1916.

<sup>(1)</sup> Reg. 7.

<sup>(4)</sup> Reg. 12.

<sup>(7)</sup> Reg. 20 (1).

<sup>(10)</sup> Reg. 16.

<sup>(13)</sup> Reg. 15.

<sup>(2)</sup> Reg. 9.

<sup>(5)</sup> Reg. 13.

<sup>(8)</sup> Reg. 20 (3).

<sup>(11)</sup> Reg. 17.

<sup>(3)</sup> Reg. 10.

<sup>(6)</sup> Reg. 14.

<sup>(9)</sup> Reg. 20 (4).

<sup>(12)</sup> Reg. 19.

<sup>(14)</sup> Reg. 17.

## CHAPTER VII.

**Group 7.—The Use of Colours containing Lead.<sup>(1)</sup>****(1) France.**

By Law passed on the 20th July, 1909, the use of white lead or lead paints for the painting of buildings both inside and out was forbidden after the expiration of five years from the promulgation of that Law. The text of this Law was subsequently incorporated into the Code of Labour as Articles 78, 79 and 80 of Book 2. As a result, the use of white lead in painting should have ceased as from the 1st January, 1915. Owing to the war, however, it was not found practicable to put the prohibition into effect.<sup>(2)</sup> Subsequently, the absolute prohibition was put into effect, subject to the limitation that paints containing not more than 5 per cent. of the sulphate of lead might be used.<sup>(3)</sup>

By a Decree dated 1st October, 1913, relating to the use of white lead and lead paints in painting work,<sup>(4)</sup> the use of white lead and lead paints for painting when not prohibited as aforesaid is regulated.<sup>(5)</sup>

The following are the main provisions, and these provisions, it will be observed, are designed to avoid dust and personal dirtiness :—

- (1) The white lead must be used only in the form of a paste. It must not be applied directly by hand. Dry scraping and pumiceing is forbidden.
- (2) Overalls must be supplied and worn by workmen engaged in scraping and pumiceing. The employers are required to keep the garments clean.
- (3) Appliances and tools must be clean and they must be cleansed without dry scraping.
- (4) Articles necessary for cleanliness must be placed at the disposal of the workers at the workplace itself.

Provision is also made for the notification of the requirement of the law to the workpeople.

(1) The text of the Geneva Convention relative to the use of lead paints has not yet been published.

(2) See Circular of the 7th March, 1917, issued by the under Secretary of State for Labour.

(3) See Circulars of the 5th April, 1918, and 13th June, 1919, both issued by the Ministry of Labour, France.

(4) For text, see *post*, p. 137.

(5) These regulations would apply to such industries as coach painting, perambulator painting, safe painting, and presumably ship painting, indeed the painting of anything other than the painting of "bâtiments."

**(2) Germany.**

A Regulation was issued on the 27th June, 1905.<sup>(1)</sup>

The process of preparing lead colours by hand is restricted and the worker is required to be protected against dust.<sup>(2)</sup> Rubbing down and pumice stoning and stopping may not be done dry, and *débris* produced must be removed before it becomes dry.<sup>(3)</sup>

Overalls must be provided, also washing utensils, nail brushes, soap and towels.<sup>(4)</sup>

The employés must be informed as to the danger to health to which they are exposed.<sup>(5)</sup>

Where the operations are carried on in connection with another industry, there must be washing and dressing accommodation provided, which must be clean and heated.<sup>(6)</sup> Places for the storage of clothing must be provided.<sup>(6)</sup>

Spirits may not be consumed in any place where work is carried on.<sup>(7)</sup>

Working clothes must be put off and hands carefully washed before partaking of food or drink or before leaving the premises.<sup>(8)</sup>

Smoking cigars and cigarettes is prohibited.<sup>(9)</sup>

Working clothes must be worn.<sup>(10)</sup>

Medical examination every six months is required.<sup>(11)</sup> Persons suspected of plumbism may be suspended.<sup>(11)</sup> A health register must be kept.<sup>(12)</sup>

**(3) Austria.**

Regulations were made on the 15th April, 1908.<sup>(13)</sup> According to Dr. Ludwig Taleky's report on "Lead Poisoning amongst Painters and Decorators in Vienna," this order, which came into force on the 1st April, 1909, includes all who are industrially concerned with painting operations, not only in buildings in course of construction and repair but also in furniture factories, works where varnish painting is done on metal sheets, and works where varnish is done on carriages.<sup>(14)</sup>

By these regulations use of lead paints for internal painting, *i.e.*, painting which is not continuously exposed or specially designed to stand exposure to the direct influence of the weather, is prohibited, except in the one indicated exception.<sup>(15)</sup>

Restrictions are imposed on the hand mixing of paints or varnish,<sup>(16)</sup> and in such operations the worker must be com-

(1) For text, *see post*, p. 155. This regulation was expressly continued in force by Reg. 1 of the Order of the 27th January, 1920, *see post*, p. 139.

(2) Regs. 1 and 2

(3) Reg. 3.

(4) Regs. 4 and 5.

(5) Reg. 6.

(6) Reg. 8.

(7) Reg. 9 (1).

(8) Reg. 9 (2).

(9) Reg. 9 (4).

(10) Reg. 9 (3).

(11) Reg. 10.

(12) Reg. 11.

(13) For text, *see post*, p. 179. By a decree of the Administration of Lower Austria, dated 27th August, 1906, the use of leadless paints was made a condition in contracts for the painting of State and certain public buildings.

(14) *See* Cd. 361, 1920, p. 41.

(15) Reg. 4.

(16) Reg. 7.

pletely protected against dust.<sup>(1)</sup> Rubbing down of paint or putty must be done wet.<sup>(1)</sup>

Overalls and head coverings must be supplied and used,<sup>(2)</sup> and must be cleaned by a wet method.<sup>(3)</sup>

Persons employed must be supplied with a sufficient supply of water for drinking and washing purposes; washing utensils, soap and towels and respirators in processes entailing the generation of much dust.<sup>(4)</sup>

Restrictions are imposed on the places where lead compound may be stored.<sup>(5)</sup>

Washing before meal times and at the termination of employment is required.<sup>(6)</sup> The mouth must be washed out.<sup>(6)</sup>

Drinking of spirits and the smoking or chewing of tobacco and the taking of snuff is forbidden.<sup>(6)</sup>

Restrictions are imposed on places where food and drink may be consumed.<sup>(6)</sup>

#### (4) Switzerland.

In Basle the use of white lead in work carried on on behalf of the State was prohibited by notification dated 28th February, 1908.

A law was passed on the 26th October, 1907, and regulations have been issued thereunder.<sup>(7)</sup> By these regulations the use of white lead otherwise than in the form of paste is prohibited.<sup>(8)</sup> Dry pumice stoning, dry scraping off and burning off of paint is prohibited.<sup>(9)</sup> Filling in by hand with lead putty is prohibited.<sup>(10)</sup>

A limitation is imposed on the length of time a worker may be employed in pumice stoning freshly painted surfaces.<sup>(11)</sup>

The employer must provide necessary apparatus and utensils to avoid hand manipulation of white lead.

Overalls, lockers and accessories for cleanliness, especially water, soap and towels<sup>(12)</sup> must be provided. Articles must be kept clean by workmen, and must not be scraped down dry.<sup>(13)</sup> The remains of paint must not be swept up without damping.<sup>(14)</sup>

Employers must direct their workmen as to rules to be followed to avoid the danger of lead poisoning.<sup>(14)</sup>

#### (5) Belgium.

A law was passed on the 20th August, 1909, relating to the use of white lead in painting, and regulations were made on the 25th July, 1910.<sup>(15)</sup>

These regulations follow on lines very similar to those of Austria and Switzerland. The use of white lead, except in the form of paste, is restricted. Manipulation by hand is prohibited. Necessary utensils must be supplied, dry scraping and dry pumice stoning are prohibited.

(1) Reg. 7.

(2) Regs. 8 and 10.

(3) Reg. 5.

(4) Reg. 8.

(5) Reg. 9.

(6) Reg. 10.

(7) For text, *see post*, p. 208.

(8) Art. 1.

(9) Art. 2.

(10) Art. 3.

(11) Art. 4.

(12) Art. 5.

(13) Art. 6.

(14) Art. 7.

(15) For text, *see post*, p. 177.

Overalls must be worn, material and tools must be kept clean. Articles and materials must be supplied for rinsing the mouth, washing the face and hands with soap and for drying. Washing before eating or leaving the workplace is required.

The employer is also required to have a quarterly medical examination,<sup>(1)</sup> and employes may be suspended.<sup>(1)</sup> A health register must be kept.<sup>(1)</sup>

A restriction is imposed upon the employment of workmen given to drunkenness, and the introduction or consumption of spirits in the workshops and workplaces is forbidden.<sup>(1)</sup>

#### **(6) The Netherlands.**

Workrooms in which as a rule poisonous paint is mixed, worked or used fall within category B for the purposes of the Safety Act, 1916. Varnishing and enamelling works, however, are relegated to the new category M.

#### **(7) Czecho-Slovakia.**

Regulations are the same as in Austria as regards Bohemia, Moravia, and Silesia, the Austrian Decree of the 15th April, 1908, applying to these provinces. No similar regulations have been made for Slovakia and Ruthenia.

#### **(8) Finland.**

By Decree dated 14th March, 1919, persons under 18 years of age are prohibited from preparing or using paints having a lead basis.

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## CHAPTER VIII.

### **Miscellaneous Industries.**

#### **Group 8.—Tinning of Metal Articles.**

##### **(1) Great Britain.**

Regulations were made in 1909.<sup>(2)</sup>

*Prevention of dust and fumes.*—Dust and refuse collected from the floors must not be deposited in any room in which work is carried on.<sup>(3)</sup> Certain operations must be done under an efficient exhaust draught.<sup>(4)</sup> Skimmings must be placed in a covered receptacle, and must not be deposited in any room in which work is carried on.<sup>(5)</sup>

*Cleanliness.*—For women employed in tinning a cloakroom must be provided, and also aprons.<sup>(6)</sup> For all persons employed in tinning, mounting, denting, or scouring, a mealroom must be provided unless the works are closed during meal times,<sup>(7)</sup> and for such persons there must be provided a lavatory, clean towels to be

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(1) Art. 8.

(2) No. 720 of 1909. For text, see *post*, p. 102.

(3) Reg. 4.

(4) Regs. 1 and 3.

(5) Reg. 3.

(6) Reg. 7.

(7) Reg. 8.

renewed daily, soap, nailbrushes, and the washing arrangements indicated in Regulation 9.<sup>(1)</sup>

Persons employed in tinning, mounting, denting, or scouring must wash their hands before eating or leaving the premises,<sup>(2)</sup> and may not keep, prepare or partake of food or alcoholic drink in any room in which such work is carried on.<sup>(3)</sup>

*Medical examination.*—Persons employed in tinning must be examined every three months.<sup>(4)</sup> The surgeon may suspend.<sup>(4)</sup>

A health register must be kept.<sup>(5)</sup>

*Restrictions on employment.*—No person under 16 years of age may be employed in tinning.<sup>(6)</sup>

## (2) France.

Regulations to guard against danger of lead poisoning in the tinning industry do not appear to be made. The Decree of the 1st October, 1913, being directed to avoid the danger arising from operations known as "pompage" (testing the water-tight condition of tinned goods by air pressure).

## (3) The Netherlands.

Metal ware factories in which work is done with lead, lead alloys, or lead combinations are placed in category E for the purposes of the Safety Act, 1916.

# Group 9.—Vitreous Enamelling.

## (1) Great Britain.

Regulations were made in 1908.<sup>(7)</sup>

*Prevention of dust and fumes.*—Adequate ventilation is required<sup>(8)</sup>, and floors are required to be well and closely laid, maintained in good condition, cleaned daily, and kept free from collections of dust.<sup>(9)</sup>

Benches must be cleaned daily and be kept free from dust.<sup>(10)</sup> Enamelling processes giving rise to dust or spray must be conducted under conditions securing the absence of dust or spray or under an efficient exhaust.<sup>(11)</sup>

Certain dusty operations indicated in Regulation 4 must be done over a grid, with a receptacle beneath to intercept the dust falling through.<sup>(12)</sup> If firing is done in a room not specially set apart for the purpose, no person may be employed in any other process within 20 feet from the furnaces.<sup>(13)</sup>

Arrangements must be made to prevent gases regulated in muffled furnaces from entering the workrooms.<sup>(14)</sup>

(1) Reg. 9

(4) Reg. 6.

(7) No. 1258 of 1908. For text, *see post*, p. 109.

(9) Reg. 2.

(12) Reg. 4.

(2) Reg. 12.

(4) Reg. 5.

(10) *Ibid.*

(13) Reg. 5.

(3) Reg. 13

(6) Reg. 2.

(8) Reg. 1.

(11) Reg. 3.

(14) Reg. 6.

*Cleanliness.*—Overalls and head-coverings must be supplied.<sup>(1)</sup> They must be cleaned once a week,<sup>(1)</sup> and collected at the end of the day's work.<sup>(1)</sup> There must be a place for their storage;<sup>(2)</sup> cloakrooms and meal rooms must be supplied.<sup>(3)</sup>

Lavatory accommodation, with soap, nailbrushes and clean towels renewed daily must be provided, together with the washing conveniences indicated in Regulation 12.<sup>(4)</sup>

Persons employed must wash before eating or leaving the premises<sup>(5)</sup>, arrange the hair so that it is effectually protected from dust with a head-covering<sup>(6)</sup> which he must wear<sup>(7)</sup>, and deposit it in the proper place.<sup>(7)</sup>

No person may introduce, keep, prepare or partake of any food, drink or tobacco in any room in which an enamelling process is carried on.<sup>(8)</sup>

*Medical examination.*—A quarterly examination is required.<sup>(9)</sup> The surgeon has power to suspend.<sup>(10)</sup> The person suspended may not work in any enamelling process without sanction.<sup>(11)</sup>

A health register must be kept.<sup>(12)</sup>

*Restrictions on employment.*—No child or young person under the age of 16 may be employed in any enamelling process.<sup>(13)</sup>

## (2) France.

The Decree dated the 1st October, 1913<sup>(14)</sup>, already considered under Group 2<sup>(15)</sup> applies *inter alia* to lead work operations in glass works, the manufacture of lead enamels, and their application.

## (3) The Netherlands.

Workrooms in which enamels are prepared or worked for the manufacture of enamelled articles are placed in Category A for the purposes of the Safety Act, 1916, if the enamels contain an amount of lead exceeding  $\frac{1}{2}$  per cent. of their dry weight.

### Group 10.—Heading of Yarn Dyed by means of a Lead Compound.

#### Great Britain.

Regulations were made in 1907.<sup>(16)</sup>

*Prevention of dust, etc.*—Heading must be done under an efficient exhaust draught so arranged as to draw the dust away from the workers as near as possible at the point of origin.<sup>(17)</sup> The speed of the draught at the exhaust opening must be determined at least once every three months and recorded in the general register.<sup>(17)</sup>

<sup>(1)</sup> Reg. 11 (a).

<sup>(2)</sup> Reg. 11 (b).

<sup>(3)</sup> Reg. 11 (c), (d).

<sup>(4)</sup> Reg. 12.

<sup>(5)</sup> Reg. 14 (c).

<sup>(6)</sup> Reg. 14 (d).

<sup>(7)</sup> Reg. 14 (b).

<sup>(8)</sup> Reg. 15 (b).

<sup>(9)</sup> Reg. 9.

<sup>(10)</sup> Reg. 10.

<sup>(11)</sup> Reg. 15 (a).

<sup>(12)</sup> Reg. 8.

<sup>(13)</sup> Reg. 7.

<sup>(14)</sup> For text, see *post*, p. 133.

<sup>(15)</sup> See *ante*, p. 18.

<sup>(16)</sup> No. 616, 1907. For text, see *post*, p. 113.

<sup>(17)</sup> Reg. 1.

*Cleanliness.*—Cloakroom, meal room and lavatory, together with soap, nailbrushes and clean towels and the washing conveniences indicated in Regulation 6 must be provided.<sup>(1)</sup>

Overalls and head-coverings must if so required by the Chief Inspector of Factories be provided, and if provided must be collected daily and washed or renewed weekly. A suitable place for their storage must be arranged for.<sup>(2)</sup>

*Medical inspection.*—A quarterly inspection is required. Persons may be suspended.<sup>(3)</sup>

A health register must be kept.<sup>(4)</sup>

*Restrictions on employment.*—No person under 16 years of age may be employed in heading yarn dyed by means of a lead compound.<sup>(5)</sup>

Duties are imposed upon the persons employed designed to give effect to the above provisions.<sup>(6)</sup>

### Group 11.—File Cutting.

#### (1) Great Britain.

Regulations were made in 1903.<sup>(7)</sup> Provision is made for floors to be substantial and washable,<sup>(8)</sup> for there to be adequate ventilation,<sup>(9)</sup> for washing conveniences to be provided,<sup>(10)</sup> for walls and ceilings to be kept clean<sup>(11)</sup> and for floors and benches to be cleaned once a week.<sup>(12)</sup>

File-cutting may not be carried on in any room that is used as a sleeping place or for cooking or eating meals.<sup>(13)</sup>

Clean aprons must be worn.<sup>(14)</sup>

#### (2) Germany (Prussia).

In 1907, acting on reports prepared for and presented to the Minister of Commerce and Industry, it was decided not to issue regulations for the prevention of lead-poisoning among file-cutters but to encourage the use of tin or zinc beds<sup>(15)</sup> and to circulate a notice amongst file-cutters warning them of the dangers and the best way to avoid such dangers.<sup>(16)</sup> Cleanliness and temperance are treated as the surest mode of prevention apart from absolute prohibition of the use of lead beds.

#### (3) Netherlands.

File-cutting works are placed in category E for the purposes of the Safety Act, 1916.

(1) Regs. 5 and 6.

(4) Reg. 3.

(7) No. 507 of 1903. For text, *see post*, p. 116.

(9) Regs. 1, 2, 4, 5.

(12) Reg. 8.

(15) *See* the decree of the Minister of Commerce and Industry, dated 11th April, 1907, Bulletin of the International Labour Office, Vol. II, No. 2, p. 177.

(16) For text of this notice, *see post*, p. 161.

(2) Reg. 5.

(5) Reg. 2.

(10) Reg. 6.

(13) Reg. 9.

(3) Reg. 4.

(6) Regs. 7 and 8.

(8) Reg. 3.

(11) Regs. 7 and 8.

(14) Reg. 10.



## Group 12.—Bronzing, Lithographic and Printing Work.

### (1) Great Britain.

Regulations were made in 1912.<sup>(1)</sup>

*Prevention of dust, etc.*—Bronzing by machine must be done under conditions which prevent, so far as practicable, the escape of dust into any occupied room.<sup>(2)</sup>

Bronzing by hand must be done in connection with an efficient exhaust draught or an appliance so constructed as to prevent, so far as practicable, the escape of dust into the air of any occupied room.<sup>(3)</sup>

*Cleanliness.*—Overalls for all persons and head-coverings for women must be supplied, must be collected daily and washed weekly.<sup>(4)</sup>

There must be a suitable place provided in which clothing put off can be placed.<sup>(5)</sup>

Lavatories with towels, to be renewed daily, soap, nail brushes and the conveniences indicated in Regulation 3 must be supplied.<sup>(6)</sup>

Persons employed must wash before eating or leaving the premises.<sup>(7)</sup>

The keeping, preparing or partaking of food or drink other than milk or tea provided by the occupier in any part of the factory or workshop in which bronzing is carried on is forbidden.<sup>(8)</sup> The use of tobacco in such parts of the factory, etc., is forbidden.<sup>(9)</sup>

### (2) British Columbia.

Work in printing offices where there are three or more type-setting machines is regulated by the Factories Act Amendment Act, 1918,<sup>(10)</sup> Section 2 of which provides for the carrying off of noxious fumes and gases rising during the melting and casting of type, and for the supply of exhaust fans, blowers, or other suitable devices in composing and other rooms where type-setting casting and other similar machines are used for the purpose of further aiding the discharge of all deleterious matter therefrom.

Restrictions are imposed on situating the composing and stereotyping rooms in the basement of any building<sup>(11)</sup>

### (3) Germany.

Regulations have been issued relating to the organisation and working of book printing works and type foundries.<sup>(12)</sup> These regulations provide for :—

(1) Structural formation of floors and walls so as to avoid accumulation of dust.<sup>(13)</sup>

(1) No. 361 of 1912. For text, *see post*, p. 118.

(2) Reg. 1.

(3) Reg. 2.

(4) Reg. 4 (a).

(5) Reg. 4 (b).

(6) Reg. 3.

(7) Reg. 5 (a).

(8) Reg. 6 (a).

(9) Reg. 6 (b).

(10) For text, *see post*, p. 132.

(11) Factory Act Amendment Act, 1918, section 3.

(12) For text, *see post*, p. 167.

(13) Reg. 1, paras. 4 and 7.

(2) The supply of an adequate amount of air and the provision of proper ventilation.<sup>(1)</sup>

(3) The provision of exhaust apparatus for the melting pots.<sup>(2)</sup>

Special provision is also made to eliminate the collection of dust round the type cases<sup>(3)</sup> and from the frames and compositor's desks.<sup>(4)</sup>

Adequate washing apparatus must be supplied and washing before eating or leaving the works is compulsory.<sup>(5)</sup> Clothing which is removed during the working hours must be kept outside the workrooms or in cupboards which can be closed against dust.<sup>(6)</sup>

#### (4) Austria.

Elaborate regulations relative to industrial concerns in which printing, lithography and type casting are carried on were made in 1911.<sup>(7)</sup> The kind of work regulated includes bronzing with bronzing powders and the cleansing of bronzing machines and their spare parts.<sup>(8)</sup>

Underground workrooms are forbidden.<sup>(8)</sup>

For certain work which involves high temperature and dust such as the melting of lead or type-metal, operating type and line-setting machines, stereotyping, making up, and polishing, a special building or a special department must be provided.<sup>(8)</sup>

The floors and walls are required to be so made that they do not hold dust and can be readily cleaned.<sup>(9)</sup>

Deleterious fumes must be exhausted.<sup>(10)</sup> Suitable working clothes must be worn, and in certain circumstances supplied.<sup>(11)</sup> Headcoverings are necessary in certain cases.<sup>(11)</sup> Where the employer is required to provide clothes such clothes must be properly washed and when the workman is engaged in bronzing they must be freed from dust every day.<sup>(12)</sup> In the case of bronzing and the grinding of dry lead containing colours, respirators must be supplied and these must be kept clean.<sup>(12)</sup> The usual provisions are to be found with regard to the supply of drinking water, washing apparatus, etc.<sup>(13)</sup> The numerous duties imposed upon the employed person are to be found in Regulation 13.

Washing and dressing accommodation with lockers for the storage of clothes must, subject to certain exceptions, be provided.<sup>(14)</sup> Mealrooms which must be heated during cold weather must also be provided.<sup>(14)</sup>

Very complete provision is made for the washing and dusting and cleaning of the premises, type-cases, etc.<sup>(15)</sup> The crushing

(1) *Ibid.* para. 1, 2, 3, 5, of Reg. 1. (2) Reg. 1, para. 6.

(3) Reg. 1, para. 8.

(4) Reg. 1, para. 4.

(5) Reg. 1, para. 10.

(6) Reg. 1, para. 11.

(7) For text, *see post*, p. 190.

(8) Reg. 1 (7)

(9) *Ibid.* Reg. 2.

(10) Reg. 5.

(11) Reg. 11.

(12) *Ibid.*

(13) Reg. 12.

(14) Reg. 3.

(15) Reg. 9.

and grinding of white lead and lead compounds, the mixing, kneading or rubbing the same with oil or varnish in the preparation of lead colours may only be carried out by mechanical appliances, and provision must be made to protect the work-people against dust arising therefrom.<sup>(1)</sup>

#### (5) Greece.

Regulations were made with regard to printing works in 1914.<sup>(2)</sup> These regulations proceed along very general lines and do not call for detailed examination.

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### CHAPTER IX.

#### Compensation.

In addition to regulations which aim at the prevention of plumbism, most States have, within comparatively recent years, legislated in favour of the compensation of workers who suffer from industrial diseases. Of these diseases, plumbism occupies a prominent place.

In the United Kingdom, under the Workmen's Compensation Act, 1906, Schedule III, lead poisoning or its sequelæ incurred in any process involving the use of lead or its preparations or compounds was made an industrial disease. By Order, dated 26th February, 1918, which replaced a former Order, the Schedule was slightly modified to include lead poisoning or its sequelæ incurred in the handling of lead, its preparations or compounds.

On the other hand, in the United States of America, in most of the States, lead poisoning is not scheduled as an industrial disease, and consequently occupational diseases of this nature are excluded from compensation or compensation is obtained in respect of such occupational disease as a result of the wide meaning given to the word "injury."

The practice, however, varies considerably with the different States, New York State follows the same general line as the United Kingdom; Connecticut, California, Massachusetts, North Dakota, Wisconsin and Hawaii have laws which include industrial diseases.

In some of these States occupational diseases are not expressly included within the meaning of the word "injury" but have been so included by judicial decisions. In others, for example, California, the occupational diseases are expressly included in the definition of the term "injury." Thus in the Californian Act "injury" includes "any injury or disease arising out of the employment." In Connecticut the Compensation Act includes all industrial diseases due to causes peculiar to the occupation and which are not of a contagious, communicable or mental nature.

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(1) Reg. 10.

(2) For text, *see post*, p. 226.

The general tendency would appear, however, to be in the direction of the British practice of scheduling specific diseases. Thus in South Africa in 1917 by an amending Act certain scheduled diseases of an occupational nature (including lead poisoning or its sequelæ) were made compensatable. The same course has been followed in Australia and Canada.<sup>(1)</sup>

In France by the law of the 25th October, 1919, certain specified occupational diseases were brought within the law of the 9th April, 1898, relative to workmen's compensation. Amongst these diseases are a large number of maladies due to plumbism (*intoxication saturnine*), and under this law doctors in attendance on patients suffering from these maladies are required to notify the diseases. This duty is somewhat extended by the Decree of the 4th of May, 1921.

In Switzerland the law of the 13th June, 1911, relates to compensation for illness and accidents and by Art. 68 certain occupational diseases were assimilated in their nature to accidents. By the Ordinance of the 20th August, 1920, certain substances were scheduled as substances the production or use of which gave rise to certain serious complaints. The list is lengthy and includes lead, its compounds and alloys.

It would be to little purpose to examine in detail all the various compensation or assurance laws of the various countries of the world, for it is sufficient to state that as a general principle the compensation of the worker for injury due to plumbism has generally, though not universally, been provided for.

One comment should perhaps be added—the passing of compensation laws or the scheduling of specific industrial diseases to compensation laws already passed has usually, if not always, been marked by an immediate increase in the number of cases of plumbism notified for any particular industry. This was particularly noticeable in the case of the Broken Hill lead district of New South Wales. The same phenomenon has also been observed in England, Germany and America. We have no reason to believe that it has not been observed in other countries. The cause is obvious. The attitude of the patient before and after the passing of the law or the making of such a schedule is the difference between that of a person who has no motive for repressing his illness and of a person who does not want to appear ill. It may be assumed, however, that the increases in such circumstances are to a considerable extent composed of slight cases which would formerly have passed undetected. It is in no way desired to suggest that the increases are cases of malingering. This fact, it is considered, should be carefully borne in mind when examining the statistics of lead poisoning, and it is consequently desirable when examining the

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<sup>(1)</sup> See the following Canadian Workmen's Compensation Acts:—Ontario Act of 1914 (as amended in 1917); Nova Scotia, Act of 1915; Manitoba, Act of 1916; British Columbia, Act of 1916; Alberta, Act of 1918. In all cases the schedule includes lead poisoning or its sequelæ. In the New Brunswick Act of 1918 "industrial disease" means any disease which by regulations is declared to be an industrial disease.

statistics of any country to bear in mind the dates on which Acts were passed or decisions were given or Ordinances were made which had the effect of extending compensation to industrial workers suffering from lead poisoning. Thus, for example, of the lead cases analysed by the Home Office (Great Britain) between the years 1900 and 1904, the proportion of the severe cases—males—was 33·2, between the years 1905-1909 the percentage was 22·1, and between 1910 and 1914 18·4.

The Workmen's Compensation Act of 1906 came into operation on the 1st July, 1907. It will thus be seen that the proportion of severe cases to the whole of the cases notified was much less after than before the Act came into operation. On the other hand, the moderate cases change from 20·8 per cent. in the quinquennial period 1900-1904, to 32·2 per cent. in 1910-1914. Slight cases vary from 43·1 to 48·2.

Again, the passing of a Compensation Act naturally results in a large number of doctors becoming better acquainted not only with the grosser symptoms of lead poisoning but also with its more remote consequences. To give an example, there is little doubt that in past times many persons suffering from nephritis and who died therefrom would not have been shown as dying from lead poisoning or its sequelæ although in fact the disease might have been caused by lead poisoning. As the authors of "Industrial Lead Poisoning" observe, "The continual diminution in cases is not accompanied relatively by a corresponding fall in the number of deaths of which information is received. This seeming anomaly is the result of more frequent association now than formerly following on the operation of the Workmen's Compensation Act, 1906, of lead poisoning on death certificates of lead workers suffering from chronic nephritis and its sequelæ."

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PART II.

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TEXTS.

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**GREAT BRITAIN.****Factory and Workshop Act, 1901.****EXTRACTS.**

Section 79. Where the Secretary of State is satisfied that any manufacture, machinery, plant, process or description of manual labour used in factories or workshops is dangerous or injurious to health or dangerous to life or limb, either generally or in the case of women, children or any other class of persons, he may certify that manufacture, machinery, plant, process or description of manual labour to be dangerous; and thereupon the Secretary of State may, subject to the provisions of this Act, make such regulations as appear to him to be reasonably practicable and to meet the necessity of the case.

[Sections 80-86 deal with the mode of making, approving, and publishing regulations, the application of the regulations so made, and the provisions which may be made by regulations.]

Section 73. [Notification of lead poisoning contracted in any factory or workshop made compulsory as amended by the Women and Young Persons (Employment in Lead Processes) Act, 1920, Section 4, it applies to the cases of lead poisoning contracted by any woman or young person whether in a factory or workshop or not.]

Section 74 [empowers an inspector to direct that a fan or other mechanical means of a proper construction for preventing inhalation of dust, gas, vapour or other impurity be provided in a factory or workshop in which grinding, glazing or polishing on a wheel or any process by which dust, gas, vapour or other impurity is generated or inhaled by the workers to an injurious extent.]

Section 75. (1) In every factory or workshop where lead . . . . is used suitable washing conveniences must be provided for the use of the persons employed in any department where such substances are used.

(2) In any factory or workshop where lead . . . . or other poisonous substance is so used as to give rise to dust or fumes a person shall not be allowed to take a meal or remain during the times allowed to him for meals in any room in which any such substance is used, and suitable provision shall be made for enabling the persons employed in such rooms to take their meals elsewhere in the factory or workshop.

(3) A factory or workshop in which there is a contravention of this section shall be deemed not to be kept in conformity with this Act.

Section 77. (1) In the part of a factory or workshop in which there is carried on—

\* \* \* \* \*

(b) The process of making white lead, a young person or child must not be employed.

78. (1) A woman, young person or child must not be allowed to take a meal or to remain during the times allowed for meals in the following factories or workshops or parts of factories or workshops; that is to say—

\* \* \* \* \*

(b) in the case of glass works where flint glass is made, in any part in which the work of grinding, cutting, or polishing is carried on.

\* \* \* \* \*

(d) in the case of earthenware works, in any part known or used as dippers house, dippers drying room or china scouring room.

(2) If a woman, young person or child is allowed to take a meal or to remain during the times allowed for meals in a factory or workshop or part thereof in contravention of this section, the woman, young person or child shall be deemed to be employed contrary to the provisions of this Act.

(3) Notice of the prohibition in this section shall be affixed in every factory or workshop to which it applies.

(4) [Power to extend.]

(5) [Power to rescind extending Order.]

### **Women and Young Persons (Employment in Lead Processes) Act, 1920 (10 & 11 Geo. 5, Ch. 62).**

An Act to make provision for the better protection of Women and Young Persons against Lead Poisoning.

[23rd December, 1920.]

Whereas at Washington on the twenty-eighth day of November, nineteen hundred and nineteen, a general conference of the International Labour Organisation of the League of Nations adopted a Recommendation in the form set out in the Schedule to this Act, and it is expedient that, for the purpose of carrying out the said Recommendation, the provisions hereinafter contained should have effect:

Be it therefore enacted by the King's Most Excellent Majesty, by and with the advice and consent of the Lords Spiritual and Temporal, and Commons, in this present Parliament assembled, and by the authority of the same, as follows:—

1. It shall not be lawful for any person to employ any woman or young person in any of the following operations:—

(a) Work at a furnace where the reduction or treatment of zinc or lead ores is carried on:

(b) The manipulation, treatment or reduction of ashes containing lead, the desilverising of lead, or the melting of scrap lead or zinc:

(c) The manufacture of solder or alloys containing more than ten per cent. of lead:

(d) The manufacture of any oxide, carbonate, sulphate, chromate, acetate, nitrate, or silicate of lead:

(e) Mixing or pasting in connection with the manufacture or repair of electric accumulators :

(f) The cleaning of workrooms where any of the processes aforesaid are carried on.

2.—(1) It shall not be lawful for any person to employ in any process involving the use of lead compounds any woman or young person if the process is such that dust or fume from a lead compound is produced therein, or the persons employed therein are liable to be splashed with any lead compound in the course of their employment, unless the following regulations are complied with as respects all women and young persons employed :—

(a) Where dust or fume from a lead compound is produced in the process, provision must be made for drawing the fume or dust away from the persons employed by means of an efficient exhaust draught so contrived as to operate on the dust or fume as nearly as may be at its point of origin :

(b) The persons employed must undergo the prescribed medical examination<sup>(1)</sup> at the prescribed intervals, and the prescribed record must be kept with respect to their health :

(c) No food, drink or tobacco shall be brought into or consumed in any room in which the process is carried on, and no person shall be allowed to remain in any such room during meal times :

(d) Adequate protective clothing in a clean condition shall be provided by the employer and worn by the persons employed :

(e) Such suitable cloak-room, mess-room and washing accommodation as may be prescribed<sup>(2)</sup> shall be provided for the use of the persons employed :

(f) The rooms in which the persons are employed, and all tools and apparatus used by them, shall be kept in a clean condition.

(2) It shall not be lawful for any person to employ in any process involving the use of lead compounds any woman or young person who has been suspended after medical examination from employment in any such process on the ground that continuance therein would involve special danger to health.

3.—(1) Where an inspector under the Factory and Workshop Act, 1901, suspects that any substance used or intended for use in any process in which women or young persons are employed contains a lead compound, he may at any time take for analysis sufficient samples of that substance

(2) If the occupier of the factory or workshop in which any such process is carried on refuses to allow an inspector to take samples in pursuance of this section, or to give him facilities for the purpose, he shall be guilty of obstructing the inspector in the execution of his duties under the said Act :

(<sup>1</sup>) See Appendix B, (2).

(<sup>2</sup>) See Appendix B, (3).

Provided that the occupier of a factory may, at the time when a sample is taken under this section, and on providing the necessary appliances, require the inspector to divide the sample into two parts and to mark and seal and deliver to him one such part.

(3) In this section the expression "occupier of a factory or workshop" includes any person employing a woman or young person in any process involving the use of lead compounds in any place other than a factory or workshop.

(4) A certificate purporting to be a certificate by the Principal Chemist of the Government Laboratory as to the result of an analysis of a sample under this section shall, in any proceedings under this Act, be evidence of the matters stated therein, unless either party requires the person by whom the analysis was made to be called as a witness.

(5) It shall not be lawful for any person, except in so far as is necessary for the purposes of a prosecution for an offence under this Act, to publish or disclose to any person the results of an analysis made under this Act.

If any person acts in contravention of the provisions of this subsection, he shall be liable on summary conviction to a fine not exceeding fifty pounds.

4. Section seventy-three of the Factory and Workshop Act, 1901 (which requires notification to be sent to the Chief Inspector of Factories of lead poisoning contracted in any factory or workshop), shall apply to lead poisoning contracted by any woman or young person in processes involving the use of lead compounds, whether carried on in factories or workshops or not.

5. If any person employs a woman or young person in contravention of this Act in any place other than a factory or workshop, he shall be liable on summary conviction to a fine not exceeding twenty pounds, and an inspector appointed under the Factory and Workshop Acts, 1901 to 1911, shall, in relation to the case, have the same powers and duties as if the place in which the woman or young person is employed were a factory or workshop.

6. In this Act—

The expression "young person" means a person who is under the age of eighteen years;

The expression "prescribed" means prescribed by order made by the Secretary of State, and the provisions of paragraph (a) of subsection (3) and subsections (4), (6), and (7) of section seven of the Police Factories, etc. (Miscellaneous Provisions) Act, 1916, shall apply with respect to orders made under this Act as they apply with respect to orders made under that section;

The expression "lead compound" means any soluble compound of lead which is declared by order <sup>(1)</sup> of the Secretary of State to be a lead compound for the purposes of this Act, and includes a mixture containing any such

(1) See, for Order, Appendix B, (1).

compound, but does not include an alloy containing lead :

The method of ascertaining whether any compound or mixture is a lead compound within the meaning of this Act shall be such as the Secretary of State may prescribe.

7.—(1) This Act may be cited as the Women and Young Persons (Employment in Lead Processes) Act, 1920, and shall be construed as one with the Factory and Workshop Acts, 1901 to 1911, and this Act and those Acts may be cited together as the Factory and Workshop Acts, 1901 to 1920.

(2) This Act shall come into operation on the first day of January, nineteen hundred and twenty-one.

### *Schedule.*

#### RECOMMENDATION CONCERNING THE PROTECTION OF WOMEN AND CHILDREN AGAINST LEAD POISONING.

The General Conference recommends to the members of the International Labour Organisation that, in view of the danger involved to the function of maternity and to the physical development of children, women and young persons under the age of eighteen years be excluded from employment in the following processes :—

- (a) In furnace work in the reduction of zinc or lead ores.
- (b) In the manipulation, treatment, or reduction of ashes containing lead, and in the desilverising of lead.
- (c) In melting lead or old zinc on a large scale.
- (d) In the manufacture of solder or alloys containing more than ten per cent. of lead.
- (e) In the manufacture of litharge, massicot, red lead, white lead, orange lead, or sulphate, chromate, or silicate (frit) of lead.
- (f) In mixing and pasting in the manufacture or repair of electric accumulators.
- (g) In the cleaning of workrooms where the above processes are carried on.

It is further recommended that the employment of women and young persons under the age of eighteen years in processes involving the use of lead compounds be permitted only subject to the following conditions :—

- (a) Locally applied exhaust ventilation, so as to remove dust and fumes at the point of origin.
- (b) Cleanliness of tools and workrooms.
- (c) Notification to Government authorities of all cases of lead poisoning, and compensation therefor.
- (d) Periodic medical examination of the persons employed in such processes.
- (e) Provision of sufficient and suitable cloakroom, washing, and mess-room accommodation, and of special protective clothing.
- (f) Prohibition of bringing food or drink into workrooms.

**REGULATIONS (GREAT BRITAIN).<sup>(1)</sup>****For the Smelting of Materials containing Lead, the Manufacture of Red or Orange Lead, and the Manufacture of Flaked Litharge.**

(1911. No. 752.)

In pursuance of section 79 of the Factory and Workshop Act, 1901, I hereby make the following Regulations, and direct that they shall apply to all factories and workshops or parts thereof (other than laboratories), in which any of the following processes are carried on:—

THE SMELTING OF MATERIALS CONTAINING LEAD;

THE MANUFACTURE OF RED OR ORANGE LEAD;

THE MANUFACTURE OF FLAKED LITHARGE.

These Regulations shall come into force on October 1st, 1911, except that so much of Regulations 2 and 3 as requires the provision of *efficient exhaust draught* shall come into force on May 1st, 1912.

*Definitions.*<sup>(2)</sup>

In these Regulations:—

“ *Lead material* ” means—

- (i) material containing not less than five per cent. of lead, including lead ore, bullion ore (lead ore rich in precious metals), red lead, orange lead, and flaked litharge; and
- (ii) zinc ore, and material resulting from the treatment thereof, containing not less than two per cent. of lead; except ores which contain lead only in the form of sulphide of lead.

“ *Furnace*,” “ *melting pot*,” “ *retort*,” “ *condensing chamber*,” mean structures as aforesaid which are used in the treatment of *lead material*.

“ *Flue* ” means a flue leading from a *furnace*.

“ *Lead process* ” means—

- (i) manipulation, movement or other treatment of *lead material*, whether by means of any *furnace*, *melting pot*, *retort*, *condensing chamber*, *flue*, or otherwise; and
- (ii) cleaning or demolition of any *furnace*, *melting pot*, *retort*, *condensing chamber*, *flue*, or part thereof or reconstruction thereof with material which has formed part of any such structure.

“ *Surgeon* ” means the Certifying Factory Surgeon of the district or a duly qualified medical practitioner appointed by written certificate of the Chief Inspector of Factories, which

<sup>(1)</sup> These Regulations were gazetted August 18, 1911.

<sup>(2)</sup> Terms to which defined meanings are given are printed throughout the Regulations in italics.

appointment shall be subject to such conditions as may be specified in that certificate.

“ *Suspension* ” means suspension from employment in any *lead process* by written certificate in the Health Register, signed by the *Surgeon*, who shall have power of suspension as regards all persons employed in any *lead process*.

“ *Damp* ” means sufficiently moist to prevent the escape of dust.

“ *Efficient exhaust draught* ” means localised ventilation effected by heat or mechanical means, for the removal of gas, vapour, fumes or dust so as to prevent them (as far as practicable under the atmospheric conditions usually prevailing) from escaping into the air of any place in which work is carried on. No draught shall be deemed efficient which fails so to remove smoke generated at the point where such gas, vapour, fumes or dust originate.

### *Duties.*

It shall be the duty of the occupier to observe Part I of these Regulations.

It shall be the duty of every person employed to observe Part II of these Regulations.

## PART I.

### *Duties of Occupiers.*

1. Where a *lead process* is carried on so as to give rise to dust or fumes,

(a) the floor, other than sand beds, shall be maintained in good condition; and

(b) the floor, except such portion as is permanently set apart for the deposit of *lead material*, shall be sprayed with water at least once a day.

2.—(1) No *lead material* (other than ingots of metal) shall be deposited or allowed to remain on any part of the floor not permanently set apart for the purpose, and no *lead material* (other than ingots of metal) shall be moved to a *furnace*, unless such *lead material* is—

(a) *damp*; or

(b) under an *efficient exhaust draught*; or

(c) so enclosed as to prevent the escape of dust into the air of any place in which work is carried on.

(2) Provided, however, that where none of the above conditions are practicable, *lead material* may be moved to a *furnace* by persons wearing suitable respirators.

3. None of the following processes shall be carried on except with an *efficient exhaust draught*:—

melting old or dirty scrap lead;

heating *lead material* so that vapour containing lead is given off;

cooling molten flaked litharge;



or, unless carried on in such manner as to prevent escape of gas, vapour, fumes or dust into any place in which work is carried on—

feeding any *furnace* or *retort* ;

manipulating *lead material* in any *furnace* or *retort* ;

removing *lead material* from any *furnace* or *retort* ;

placing in any hopper or shoot, or packing, red or orange lead or flaked litharge.

4. No sack which has contained *lead material* shall be cleaned, and, except in the process of sampling, no *lead material* shall be broken up, crushed or ground, unless such sack or *lead material* is *damp*, or is placed in an apparatus so enclosed as to prevent the escape of dust.

5. No *lead material* giving off vapour containing lead shall be removed from the *efficient exhaust draught* required by Regulation 3, unless in a receptacle with an efficient cover.

6. No person shall be allowed to enter any *furnace*, *melting pot*, *retort*, *condensing chamber*, or *flue*, until it has been ventilated.

7. No person shall be allowed to remain in any *flue* (unless *damp*) or *condensing chamber* for more than three hours without an interval of at least half an hour.

8. There shall be provided suitable overalls for the use of all persons employed in any of the following processes ; which overalls, when required for such use, shall be washed, cleaned or renewed at least once every week :—

(a) cleaning any *flue* (unless *damp*) or *condensing chamber* ;

(b) demolishing any part of a *furnace*, *melting pot*, *retort*, *condensing chamber*, or *flue*, unless either *damp* or under an *efficient exhaust draught* ;

(c) reconstructing any part of a *furnace*, *melting pot*, *retort*, *condensing chamber*, or *flue*, with material which has formed part of any such structure, unless *damp* ;

(d) breaking up, crushing, or grinding, in the process of sampling, *lead material* unless either *damp* or placed in an apparatus so enclosed as to prevent the escape of dust ;

(e) placing in any hopper or shoot, or packing, red or orange lead or flaked litharge.

9. There shall be provided suitable respirators for the use of all persons employed in any process named in Regulation 2 (2) or in Regulation 8 ; which respirators, when required for such use, shall be washed or renewed at least once every day.

10. No person under 16 years of age, and no female, shall be employed in any *lead process*.

11. There shall be provided and maintained for the use of all persons employed in any *lead process* :—

(a) a suitable meal room, unless the works are closed during meal hours ;

(b) a suitable place or places for clothing put off during working hours ; and

- (c) a suitable place or places for the storage of overalls provided in pursuance of Regulation 8; which place or places shall be separate from those required by paragraphs (a) and (b) of this Regulation;

all of which shall be so located as not to be exposed to dust or fumes from any manufacturing process.

12. There shall be provided and maintained in a cleanly state and in good repair for the use of all persons employed in any *lead process* :—

- (a) a lavatory, under cover, with a sufficient supply of clean towels, renewed daily, and of soap and nail brushes, and with either :—

(i) a trough with a smooth impervious surface, fitted with a waste-pipe without plug, and of such length as to allow at least two feet for every five such persons employed at any one time, and having a constant supply of warm water from taps or jets above the trough at intervals of not more than two feet; or

(ii) at least one lavatory basin for every five such persons employed at any one time, fitted with a waste-pipe and plug, and having either a constant supply of hot and cold water or warm water laid on, or (if a constant supply of heated water be not reasonably practicable) a constant supply of cold water laid on, and a supply of hot water always at hand when required for use by such persons; and

- (b) sufficient and suitable bath accommodation (douche or other) with hot water laid on, unless the water supply provided under paragraph (a) is so arranged that a warm douche for the face, neck and arms can be taken.

Provided that, when the number of persons so employed at any one time is temporarily increased by reason of *flue* cleaning, it shall not be necessary to provide (by reason only of such temporary increase) additional accommodation in pursuance of paragraph (a) of this Regulation if adequate time is allowed to all such persons for washing immediately before each meal (in addition to the regular meal times) and immediately before the end of the day's work.

13.—(a) Every person employed in a *lead process* shall be examined by the *Surgeon* once in every calendar month (or at such shorter or longer intervals as may be prescribed in writing by the Chief Inspector of Factories) on a date of which due notice shall be given.

(b) A Health Register containing the names of all persons employed in any *lead process* shall be kept in a form approved by the Chief Inspector of Factories.

(c) No person after *suspension* shall be employed in any *lead process* without written sanction from the *Surgeon*, entered in the Health Register.

## PART II.

*Duties of Persons Employed.*

14.—(a) Every person employed in any *lead process* shall deposit in the place or places provided in pursuance of Regulation 11 (b) all clothing put off during working hours.

(b) Every person for whose use an overall is provided in pursuance of Regulation 8 shall wear the overall when employed in any process named in that Regulation, and remove it before partaking of food or leaving the premises, and deposit it in the place provided under Regulation 11 (c).

(c) Every person for whose use a respirator is provided in pursuance of Regulation 9, shall wear the respirator while employed in any process to which Regulation 2 (2) or Regulation 8 applies.

15. No person employed shall introduce, keep, prepare or partake of any food or drink (other than a non-alcoholic drink approved by the *Surgeon*), or make use of tobacco, in any place in which any *lead process* is carried on;

Provided that, except in processes named in Regulation 8, this Regulation shall not prevent any person from using tobacco, other than a cigar or cigarette, if his hands are free from lead.

16. Every person employed in any *lead process*, or in any place where any *lead process* is being carried on, shall, before partaking of food, wash the face and hands, and, before leaving the premises, wash the face, neck and arms in the lavatory provided in pursuance of Regulation 12.

17. Every person employed in any *lead process* shall present himself at the appointed time for examination by the *Surgeon*, in pursuance of Regulation 13 (a).

18. No person employed shall, after *suspension* under these Regulations or under any other Regulations or Special Rules applying to factories or workshops where any process involving the use of lead is carried on, work in any *lead process* without written sanction from the *Surgeon*, entered in the Health Register.

19. No person employed shall interfere in any way, without the concurrence of the occupier or manager, with the means provided for the removal of gas, vapour, fumes and dust, and for the carrying out of these Regulations.

W. S. Churchill,

One of His Majesty's Principal  
Secretaries of State.

Home Office, Whitehall,  
12th August, 1911.

**REGULATIONS (GREAT BRITAIN).****For the Manufacture of White Lead.**

CODES OF SPECIAL RULES ESTABLISHED UNDER THE FACTORY AND WORKSHOP ACTS 1891 AND 1895.

In these Rules "person employed in a lead process" means a person who is employed in any work or process involving exposure to white lead, or to lead or lead compounds used in its manufacture, or who is admitted to any room or part of the factory where such process is carried on.

Any approval given by the Chief Inspector of Factories in pursuance of Rules 2, 4, 6, 9, or 12 shall be given in writing, and may at any time be revoked by notice in writing signed by him.

*Duties of Occupiers.*

1. On and after July 1st, 1899, no part of a white lead factory shall be constructed, structurally altered, or newly used, for any process in which white lead is manufactured or prepared for sale, unless the plans have previously been submitted to and approved in writing by the Chief Inspector of Factories.

2.—(a) Every stack shall be provided with a standpipe and movable hose, and an adequate supply of water distributed by a rose.

(b) Every white bed shall, on the removal of the covering boards, be effectually damped by the means mentioned above.

Where it is shown to the satisfaction of the Chief Inspector of Factories that there is no available public water service in the district, it shall be a sufficient compliance with this Rule if each white bed is, on the removal of the covering boards, effectually damped by means of a watering can.

3. Where white lead is made by the chamber process, the chamber shall be kept moist while the process is in operation, and the corrosions shall be effectually moistened before the chamber is emptied.

4.—(a) Corrosions shall not be carried except in trays of impervious material.

(b) No person shall be allowed to carry on his head or shoulder a tray of corrosions which has been allowed to rest directly upon the corrosions, or upon any surface where there is white lead.

(c)<sup>(1)</sup> All corrosions before being put into the rollers or washbecks shall be effectually damped, either by dipping the tray containing them in a trough of water or by some other method approved by the Chief Inspector of Factories.

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(1) The following addition to Rule 4 (c) is in force in one works :—

"Provided that the damping of the corrosions shall not be required if efficient exhaust ventilation is applied at the washbecks in such manner as to prevent the inhalation of dust by the workers when putting the corrosions into the washbecks or rollers."

5. The flooring round the rollers shall either be of smooth cement or be covered with sheet lead, and shall be kept constantly moist.

6. On and after January 1st, 1901, except as hereinafter provided—

(a) Every stove shall have a window, or windows, with a total area of not less than 8 square feet, made to open, and so placed as to admit of effectual through ventilation.

(b) In no stove shall bowls be placed on a rack which is more than 10 feet from the floor.

(c) Each bowl shall rest upon the rack and not upon another bowl.

(d) No stove shall be entered for the purpose of drawing until the temperature at a height of 5 feet from the floor has fallen either to 70° F., or to a point not more than 10° F. above the temperature of the air outside.

(e) In drawing any stove or part of a stove there shall not be more than one stage or standing place above the level of the floor.

Provided that if the Chief Inspector approves of any other means of ventilating a stove, as allowing of effectual through ventilation, such means may be adopted, notwithstanding paragraph (a) of this Rule; and if he approves of any other method of setting and drawing the stoves, as effectually preventing white lead from falling upon any worker, such method may be followed, notwithstanding paragraphs (b) and (e) of this Rule.

7. No person shall be employed in drawing Dutch stoves on more than two days in any week.

8. No dry white lead shall be deposited in any place that is not provided either with a cover or with a fan effectually removing the dust from the worker.

9. On and after January 1st, 1900, the packing of dry white lead shall be done only under conditions which secure the effectual removal of dust, either by exhaust fans or by other efficient means approved in each case by the Chief Inspector of Factories.

This Rule shall not apply where the packing is effected by mechanical means entirely closed in.

10. The floor of any place where packing of dry white lead is carried on shall be of cement, or of stone set in cement.

11. No woman shall be employed or allowed in the white beds, rollers, washbecks, or stoves, or in any place where dry white lead is packed, or in other work exposing her to white lead dust.

12.—(a) A duly qualified medical practitioner (in these Rules referred to as the "Appointed Surgeon") shall be appointed by the occupier for each factory, such appointment to be subject to the approval of the Chief Inspector.

(b) No person shall be employed in a lead process for more than a week without a certificate of fitness granted after examination by the Appointed Surgeon.

(c)<sup>(1)</sup> Every person employed in a lead process shall be examined once a week by the Appointed Surgeon, who shall have power to order suspension from employment in any place or process.

(d) No person after such suspension shall be employed in a lead process without the written sanction of the Appointed Surgeon.

(e) A Register in a form approved by the Chief Inspector of Factories shall be kept, and shall contain a list of all persons employed in lead processes. The Appointed Surgeon will enter in the Register the dates and results of his examinations of the persons employed, and particulars of any directions given by him. The Register shall be produced at any time when required by H.M. Inspectors of Factories or by the Certifying Surgeon or by the Appointed Surgeon.

13. Upon any person employed in a lead process complaining of being unwell, the occupier shall, with the least possible delay, give an order upon a duly qualified medical practitioner.

14. The occupier shall provide and maintain sufficient and suitable respirators, overalls, and head-coverings, and shall cause them to be worn as directed in Rule 29.

At the end of every day's work they shall be collected and kept in proper custody in a suitable place set apart for the purpose.

They shall be thoroughly washed or renewed every week; and those which have been used in the stoves, and all respirators, shall be washed or renewed daily.

15. The occupier shall provide and maintain a dining-room and a cloak-room in which workers can deposit clothing put off during working hours.

16. No person employed in a lead process shall be allowed to prepare or partake of any food or drink except in the dining-room or kitchen.

17. A supply of a suitable sanitary drink, to be approved by the Appointed Surgeon, shall be kept for the use of the workers.

18. The occupier shall provide and maintain a lavatory for the use of the workers, with soap, nail brushes, and at least one lavatory basin for every five persons employed. Each such basin shall be fitted with a waste pipe. There shall be a constant supply of hot and cold water laid on, except where there is no available public water service, in which case the provision of

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<sup>(1)</sup> The following Rule is in force in one works in substitution for Rule 12 (c) :—

“Every person employed in a lead process shall once in each calendar month, on a date of which notice shall be given to every such person, be examined by the Appointed Surgeon who shall have power to suspend from employment in any lead process.”

hot and cold water shall be such as shall satisfy the Inspector in charge of the district <sup>(1)</sup>

The lavatory shall be thoroughly cleaned and supplied with clean towels after every meal.

There shall, in addition, be means of washing in close proximity to the workers of each department, if required by notice in writing from the Inspector in charge of the district.

There shall be facilities, to the satisfaction of the Inspector in charge of the district, for the workers to wash out their mouths.

19. Before each meal, and before the end of the day's work, at least ten minutes in addition to the regular meal times, shall be allowed to each worker for washing.

A notice to this effect shall be affixed in each department.

20.<sup>(2)</sup> The occupier shall provide and maintain sufficient baths and dressing rooms for all persons employed in lead processes, with hot and cold water, soap, and towels, and shall cause each such person to take a bath once a week at the factory.

A bath register shall be kept, containing a list of all persons employed in lead processes, and an entry of the date when each person takes a bath.

This register shall be produced at any time when required by H.M. Inspectors of Factories or by the Certifying Surgeon or by the Appointed Surgeon.

21. The dressing rooms, baths, and w.c.'s shall be cleaned daily.

22. The floor of each workroom shall be cleaned daily, after being thoroughly damped.

#### *Duties of Persons Employed.*

23. No person shall strip a white bed or empty a chamber without previously effectually damping as directed in Rules 2 and 3.

24. No persons shall carry corrosions, or put them into the rollers or washbecks, otherwise than as permitted by Rule 4.

<sup>(1)</sup> The following Rule is in force in certain works in substitution for paragraph 1 of Rule 18 :—

“The occupier shall provide and maintain in a cleanly state and in good repair for the use of persons employed a lavatory containing either—

“(a) At least one lavatory basin for every five such persons, fitted with a waste pipe, or placed in a trough having a waste pipe, and having a constant supply of hot and cold water, or warm water, laid on ;  
or

“(b) Troughs of enamel or similar smooth impervious material, fitted with waste pipes without plugs, and having a constant supply of hot and cold water, or warm water, laid on. The length of such troughs shall be in a proportion of not less than 2 feet for every five persons employed.

“He shall also provide in the lavatory, soap, nail brushes, and a sufficient supply of towels.”

<sup>(2)</sup> The following proviso to Rule 20 is in force in one works :—

“Provided that this Rule shall not apply if the Chief Inspector of Factories approves the use of the local public baths when conveniently near, under the conditions (if any) named in such approval.”

25. No person shall set or draw a stove otherwise than as permitted by Rules 6 and 7.

26. No person shall deposit or pack dry white lead otherwise than as permitted by Rules 8 and 9.

27. Every person employed in a lead process shall present himself at the appointed times for examination by the Appointed Surgeon, as provided in Rule 12.

28. No person, after suspension by the Appointed Surgeon, shall work in a lead process without his written sanction.

29. Every person engaged in—

White beds,

Emptying chambers,

Rollers, washbecks, or grinding,

Setting or drawing stoves,

Packing,

Paint mixing,

Handling dry white lead,

or in any work involving exposure to white lead dust, shall, while so occupied, wear an overall suit and head-covering.

Every person engaged in stripping white beds, or in emptying chambers, or in drawing stoves, or in packing, shall in addition wear a respirator while so occupied.

30. Every person engaged in any place or process named in Rule 29 shall, before partaking of meals or leaving the premises, deposit the overalls, head-coverings, and respirators in the place appointed by the occupier for the purpose, and shall thoroughly wash face and hands in the lavatory.

31.<sup>(1)</sup> Every person employed in a lead process shall take a bath at the factory at least once a week, and wash in the lavatory before bathing; having done so, he shall at once sign his name in the bath register, with the date.

32. No person employed in a lead process shall smoke or use tobacco in any form, or partake of food or drink, elsewhere than in the dining room or kitchen.

33. No person shall in any way interfere, without the knowledge and concurrence of the occupier or manager, with the means and appliances provided for the removal of dust.

34. The foreman shall report to the manager, and the manager shall report to the occupier, any instance coming under his notice of a worker neglecting to observe these Rules.

35. No person shall obtain employment under an assumed name or under any false pretence.

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(1) The following Rule is in force in one works in substitution for Rule 31 :—  
“Every person employed in a lead process shall take a bath at least once a week.”



**REGULATIONS (GREAT BRITAIN).<sup>(1)</sup>****For the Manufacture of Paints and Colours.**

(1907. No. 17.)

Whereas the manufacture of paints and colours has been certified in pursuance of section 79 of the Factory and Workshop Act, 1901, to be dangerous;

I hereby in pursuance of the powers conferred on me by that Act make the following Regulations, and direct that they shall apply to all factories and workshops in which dry carbonate of lead or red lead is used in the manufacture of paints and colours or chromate of lead is produced by boiling, provided as follows:—

(1) The Regulations shall not apply to factories and workshops in which paints and colours are manufactured not for sale but solely for use in the business of the occupier; or to factories or workshops in which only the manufacture of artists' colours is carried on; or to the manufacture of varnish paints.

(2) Regulation 2, and so much of Regulation 3 as prevents the employment of a woman in manufacturing *lead colour*, shall not apply to the packing in parcels or kegs not exceeding 14 lbs. in weight, unless and until so required by notice in writing from the Chief Inspector of Factories.

(3) Regulations 4, 5, 6, 11, and 12 shall not apply to factories or workshops in which the grinding of *lead colour* occupies less than three hours in any week, unless and until so required by notice in writing from the Chief Inspector of Factories.

*Definitions.<sup>(2)</sup>*

For the purpose of these Regulations—

“ *Lead colour* ” means dry carbonate of lead and red lead, and any colour into which either of these substances enters.

“ *Lead process* ” means any process involving the mixing, crushing, sifting, grinding in oil, or any other manipulation of *lead colour* giving rise to dust; or the manufacture and manipulation of chromate of lead produced by boiling in the colour house.

It shall be the duty of the occupier to observe Part I of these Regulations.

It shall be the duty of all persons employed to observe Part II of these Regulations.

(1) These Regulations were gazetted January 25, 1907.

(2) The terms “ *lead colour* ” and “ *lead process* ” to which defined meanings are given are printed throughout in italics.

## PART I.

*Duties of Employers.*

1. No *lead colour* shall be placed in any hopper or shoot without an efficient exhaust draught and air guide so arranged as to draw the dust away from the worker as near as possible to the point of origin.

2. No *lead process* shall be carried on, save either—

(a) with an efficient exhaust draught and air guide so arranged as to carry away the dust or steam as near as possible to the point of origin; or

(b) In the case of processes giving rise to dust, in an apparatus so closed as to prevent the escape of dust.

Provided that this Regulation shall not apply to the immersion and manipulation of *lead colour* in water.

3. No woman, young person, or child shall be employed in manipulating *lead colour*.

4. Every person employed in a *lead process* or at the roller mills connected with the grinding in oil of *lead colour* (hereinafter referred to as the *roller mills*<sup>(1)</sup>) shall once in each calendar month, on a date of which notice shall be given to every such person, be examined by the Certifying Surgeon of the district or other duly qualified medical practitioner (hereinafter referred to as the Appointed Surgeon) if appointed for the purpose by the Chief Inspector of Factories by a certificate under his hand and subject to such conditions as may be specified in that certificate.

The Certifying or Appointed Surgeon shall have power to suspend from employment in any *lead process* or at the *roller mills*.

5. No person after suspension in accordance with Regulation 4 shall be employed in any *lead process* or at the *roller mills* without written sanction entered in the Health Register by the Certifying or Appointed Surgeon.

6. A Health Register in a form approved by the Chief Inspector of Factories shall be kept and shall contain a list of all persons employed in any *lead process* or at the *roller mills*. The Certifying or Appointed Surgeon will enter therein the dates and results of his examinations of such persons with particulars of any directions given by him.

The Health Register shall be produced at any time when required by any of His Majesty's Inspectors of Factories or by the Certifying or Appointed Surgeon.

7. Overalls shall be provided for all persons employed in *lead processes* or at the *roller mills*; and shall be washed or renewed at least once every week.

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(1) The term "*roller mills*" to which a defined meaning is given is printed throughout in italics.

8. The occupier shall provide and maintain for the use of all persons employed in *lead processes* or at the *roller mills*—

- (a) a cloak-room or other suitable place in which such persons can deposit clothing put off during working hours, and separate and suitable arrangements for the storage of overalls required by Regulation 7;
- (b) a dining-room, unless all workers leave the factory during meal hours.

9. No person shall be allowed to introduce, keep, prepare, or partake of any food, drink (other than a medicine provided by the occupier and approved by the Certifying or Appointed Surgeon), or tobacco in any room in which a *lead process* is carried on. Suitable provision shall be made for the deposit of food brought by persons employed.

10. The occupier shall provide and maintain in a cleanly state and in good repair for the use of persons employed in *lead processes* or at the *roller mills* a lavatory containing either—

- (a) at least one lavatory basin for every five such persons, fitted with a waste pipe, or placed in a trough having a waste pipe, and having a constant supply of cold water laid on and a sufficient supply of hot water constantly available; or
- (b) troughs of enamel or similar smooth impervious material, fitted with waste pipes without plugs, and having a constant supply of warm water laid on. The length of such troughs shall be in a proportion of not less than two feet for every five persons employed in *lead processes* or at the *roller mills*.

He shall also provide in the lavatory soap, nail brushes, and a sufficient supply of clean towels renewed daily.

## PART II.

### *Duties of Persons Employed.*

11. All persons employed in *lead processes* or at the *roller mills* shall present themselves at the appointed time for examination by the Certifying or Appointed Surgeon as provided in Regulation 4.

12. No person after suspension under Regulation 4 shall work in a *lead process* or at the *roller mills* in any paint and colour factory or workshop to which these Regulations apply without written sanction entered in the Health Register by the Certifying or Appointed Surgeon.

13. All persons employed in *lead processes* or at the *roller mills* shall wear the overalls provided under Regulation 7 and shall deposit such overalls and any clothing put off during working hours in the places provided under Regulation 8.

The overalls shall not be removed by persons employed from the factory or workshop.

14. No person shall introduce, keep, prepare, or partake of any food, drink (other than a medicine provided by the occupier and

approved by the Certifying or Appointed Surgeon), or tobacco in any room in which a *lead process* is carried on.

15. All persons employed in *lead processes* or at the *roller mills* shall carefully clean and wash their hands before leaving the premises or partaking of any food.

16. No person shall, without the permission of the occupier or manager, interfere in any way with the means and appliances provided for the removal of dust, steam or fumes and for the carrying out of these Regulations.

These Regulations shall come into force on the 1st February, 1907.

H. J. Gladstone,

One of His Majesty's Principal  
Secretaries of State.

Home Office, Whitehall.

21st January, 1907.

## REGULATIONS (GREAT BRITAIN).<sup>(1)</sup>

### For the Manufacture and Decoration of Pottery.

(1913. No. 2)

In pursuance of section 79 of the Factory and Workshop Act, 1901, I hereby make the following Regulations, and direct that they shall apply to all factories and workshops in which the manufacture or decoration of *pottery* or any process incidental thereto is carried on; including factories and workshops in which lithographic transfers, frits, or glazes are made for use in the manufacture or decoration of *pottery*.

Provided that, if at any time it is shown to the satisfaction of the Secretary of State in the case of any manufacture or process or any operation forming part thereof, that injury to health is adequately prevented by other appliances or under other conditions than those prescribed by these Regulations, he may, by Order, modify the whole or any part of the Regulations, so far as they apply to such manufacture or process. Any such Order may be revoked, modified, or extended by further Order.

And provided, further, in regard to Regulation 10 (a) the Secretary of State may, by Order—

- (i) grant exemptions from this Regulation in the case of any special branch of the industry if it can be shown that every means has been tried for the purpose of conforming to the prescribed limit;
- (ii) substitute a limit higher than 70° Fahrenheit in the case of printing or other specified shops, if it can be shown to be necessary.

(<sup>1</sup>) These Regulations were gazetted January 7, 1913.

*Definitions.*<sup>(1)</sup>

In these Regulations :—

“ *Pottery* ” includes earthenware, china, tiles, and any other articles made from clay, with or without the addition of other material.

“ *Coarse ware* ” means *pottery* not shaped by compression of powdered material, and not fired more than once in the process of manufacture.

In the case of a fireclay works in which the ware is generally fired only once, the whole of the works may, with the approval in writing of the Chief Inspector of Factories, be regarded as a *coarse ware* factory, notwithstanding that some of the clay ware is hardened by fire before any slip or body coating is applied to the fireclay body ; subject however to the following conditions :—

(i) no slip or body coating shall be applied before such hardening ;

(ii) neither the ware so hardened nor any subsequently applied slip or body coating shall be sand-papered or treated by any other process which would generate dust ;

(iii) the approval of the Chief Inspector of Factories shall be kept attached to the general register, and shall be subject to the further conditions, if any, specified therein, and shall be revocable by further notice in writing.

“ *Leadless glaze* ” means a glaze which does not contain more than one per cent. of its dry weight of a lead compound calculated as lead monoxide.

“ *Low solubility glaze* ” means

(1) a glaze which does not yield to dilute hydrochloric acid more than five per cent. of its dry weight of a soluble lead compound calculated as lead monoxide when determined in the manner described below ; or

(2) a glaze containing no lead or lead compound other than *galena*.

A weighed quantity of dried material is to be continuously shaken for one hour, at the common temperature, with 1,000 times its weight of an aqueous solution of hydrochloric acid containing 0.25 per cent. of HCl. This solution is thereafter to be allowed to stand for one hour, and to be passed through a filter. The lead salt contained in an aliquot portion of the clear filtrate is then to be precipitated as lead sulphide, and weighed as lead sulphate.

<sup>(1)</sup> Terms to which defined meanings are given are printed throughout in italics.

- “ *Galena* ” means the native sulphide of lead containing not more than five per cent. of a soluble lead compound calculated as lead monoxide when determined in the manner described in the definition of *low solubility glaze*. *Galena* shall not for the purpose of these Regulations be deemed to be an unfritted lead compound.
- “ *Leadless glaze factory* ” means a factory the occupier of which has given an undertaking, to the satisfaction of the Chief Inspector of Factories, that none but *leadless glaze* shall be used therein, and in which none but *leadless glaze* is in fact used.
- “ *Low solubility glaze factory* ” means a factory the occupier of which has given an undertaking, to the satisfaction of the Chief Inspector of Factories, that none but *low solubility glaze* shall be used therein, and in which none but *low solubility glaze* is in fact used.
- “ *Majolica painting* ” includes painting in majolica or other glaze.
- “ *Surgeon* ” means the Certifying Factory Surgeon of the district, who shall have, as regards all persons examined by him in pursuance of these Regulations, power of *suspension* and of *permission to work*, by certificate which may either be *entered in the health register* by the *Surgeon* personally, or be sent by him to the occupier.
- “ *Entered in the health register* ” means :—
- (a) Entered in the prescribed register kept at the factory in pursuance of Regulation 3 ; or
  - (b) Entered in the portable register prescribed for the use of casual workers.
- “ *Suspension* ” means suspension, by signed certificate of the *Surgeon*, from employment in any process in which examination by the *Surgeon* is required by these Regulations.
- “ *Permission to work* ” means permission by signed certificate of the *Surgeon*, either—
- (a) Terminating a *suspension*, or
  - (b) Permitting employment of a certain specified kind.
- “ *Potters’ shops* ” includes any place where tiles or other articles are made by pressing clay dust, as well as every place where articles of *pottery* are shaped by a plastic or other process.
- “ *Wedging of clay* ” means the treatment of clay which has not been pugged or rolled, by raising one piece of clay by hand and bringing it down upon another piece ; but does not include the process, frequently known as “slapping of clay” in which two pieces of clay each small enough to be held in one hand are slapped together.
- “ *Workroom* ” shall not, for the purposes of Regulation 10, include any stove or drying chamber which is not entered by workers except for the purpose of carrying ware in or out or turning it.

- “ *Bedding* ” means the placing of flat ware in powdered flint for the biscuit firing when the sagger or box containing the ware is filled up with powdered flint.
- “ *Flinting* ” means the placing of flat ware in powdered flint for the biscuit firing when the sagger or box containing the ware is not filled up with powdered flint.
- “ *Scouring* ” includes fine brushing, as well as sandpapering, brushing, and every other scouring process, as applied to biscuit ware.
- “ *Stopping of biscuit ware* ” means the filling up of cracks in ware which has been fired once and before glaze is applied to it.
- “ *Glost placing* ” includes the operations of carrying saggars of ware into the glost oven and carrying them out again after the glost firing, as well as the operation of placing the ware in the saggars for glost firing; but not placing of ware on cranks or similar articles prior to their transfer to saggars or kilns by other persons.
- “ *Flow material* ” means any material containing lead, which is placed in saggars with a view to its entire or partial volatilization during the glost firing of the ware.
- “ *Thimble picking* ” means the picking over, sorting, or re-arranging for further use, of thimbles, stilts, spurs, strips, saddles, or any other articles which have been used for the support of articles of *pottery* during the process of glost firing.
- “ *Efficient exhaust draught* ” used in connection with a process means an exhaust draught which effectually removes, as near as possible to the point of origin, the dust generated in the process. No draught shall be deemed to be efficient which fails effectually to remove smoke generated at any point where dust originates in the process.

#### *Duties.*

It shall be the duty of the occupier to observe Part I of these Regulations.

It shall be the duty of all persons employed to observe Part II of these Regulations.

#### *Exemptions.*

1. The following Regulations<sup>(1)</sup> and parts of Regulations shall not apply to *leadless glaze factories* :—

Paragraphs ii, iii, vi, vii, of Regulation 1 a ;  
 Regulations 1 f, 1 g, 1 h, 1 k ;  
 Paragraph xii of Regulation 7 a ;  
 Regulations 7 h, 7 k, 7 l ;

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(1) The Regulations in question are marked \* ; or in case of partial or conditional exemption (\*).

Paragraph ii of Regulation 8 a ;

Regulation 12 b, so far as regards the processes marked a and c in the Schedule ;

Regulations 12 d, 14, 15 a, 15 b, 16, 17 a, 17 b, 18 ;

Regulation 19, so far as regards factories in which *flow material* is not used ;

Regulation 20 ;

Regulation 24 a, so far as regards threading up, and so far as regards *thimble picking* in factories in which *flow material* is not used ;

Regulations 35 a, 35 b ;

Regulations 1, 2, 3, 4, 5, 6, 11, 13, 17, 24, 25 (except 25 a, 25 f, 25 g), 26, 29, 30, 31, 33, 35, so far as regards the processes marked a, b, c, d, e, f, g, in Part I of the Schedule.

2. The following Regulations<sup>(1)</sup> and parts of Regulations shall not apply to *low solubility glaze factories* :—

Paragraph iii of Regulation 1 a ;

Regulations 1 f, 1 g, 1 h ;

Paragraph xii of Regulation 7 a ;

Regulation 7 k ;

Regulation 12 b, so far as regards the process marked c in Part I of the Schedule ;

Regulations 12 d, 15 a, 15 b, 16 ;

Regulation 19, so far as regards factories in which *flow material* is not used ;

Regulation 24 a, so far as regards threading up, and so far as regards *thimble picking* in factories in which *flow material* is not used ;

Regulations 2, 3, 29, so far as regards the processes marked b, c, d, e, f, g, in Part I of the Schedule.

If the occupier of a *low solubility glaze factory* satisfies the Chief Inspector of Factories that *leadless glaze* is used for a substantial part of the output, the Regulations and parts of Regulations named in Exemption 1 (except so far as regards the preparation or manufacture of frits or glazes) shall not apply to such factory unless and until so required by notice in writing from the Chief Inspector of Factories.

3. The following Regulations<sup>(2)</sup> and parts of Regulations shall not apply, unless and until so required by notice in writing from the Chief Inspector of Factories, to the manufacture of *coarse ware* in factories in which no *pottery* other than *coarse ware* is made :—

Paragraphs i, iv, vii, viii, of Regulation 1 a ;

Regulations 7 a (except paragraph xii), 7 e, 7 f, 7 g ;

Regulations 9, 10, 12 (except 12 f and 12 g), 13, 14 c, 16, 18, 19, 20, 21, 22, 23, 24 a ;

(<sup>1</sup>) The Regulations in question are marked † ; or in the case of partial or conditional exemption (†).

(<sup>2</sup>) The Regulations in question are marked ‡ ; or in case of partial or conditional exemption (§).



All Regulations so far as regards the processes marked h, k, l, m, n, o, p, q, r, s, in the Schedule.

Nothing in Regulations 4, 5, 6, 8, 14, 17, 25, 30, 31, or 35, shall apply to *leadless glaze factories* or *low solubility glaze factories* in which no *pottery* other than *coarse ware* is made.

4. Nothing in these Regulations shall apply to the manufacture of—

sanitary or drain pipes; or

bricks, glazed or unglazed; or

unglazed or salt-glazed *coarse ware* in a factory in which no other *pottery* is made.

Nothing in these Regulations (except Regulation 28) shall apply to the manufacture of architectural terra-cotta, glazed or unglazed, made from plastic clay in a factory in which no lead is used.

5. Nothing in Regulations 4 and 30 shall be deemed to require overalls or head coverings to be provided for, or worn by, any man during the time he is engaged in drawing a glost oven.

Nothing in Regulations 12 or 13 shall be deemed to require the use of moisture in cleaning floors or work benches in lithographic transfer-making shops.

6. Men employed only as glost drawers shall not be deemed to be employed in a process included in Part I of the Schedule if they do not work in any place in which a process named in Part I of the Schedule is being carried on.

## PART I.

### *Duties of Occupiers.*

#### *1. Age and Sex.*

(a) No woman, young person, or child shall be employed in the following processes:—

‡ (i) *Stopping of biscuit ware* with a material which yields to dilute hydrochloric acid more than five per cent. of its dry weight of a soluble lead compound calculated as lead monoxide when determined in the manner described in the definition of *low solubility glaze*;

\* (ii) weighing out, shovelling, or mixing of unfritted lead compounds in the preparation or manufacture of frits, glazes, or colours;

\*† (iii) lawning of glaze, except where less than a quart of glaze is lawned at a time for the worker's own use;

‡ (iv) preparation or weighing out of *flow material*;

(\*) (‡) (v) cleaning, as prescribed in Regulation 12, of floors of *potters' shops* or stoves or any place in which any process included in the Schedule is carried on;

\* (vi) cleaning, as prescribed in Regulation 17, of boards used in the dipping house, dippers' drying room, ware cleaning room, or glost placing shop;

\*‡ (vii) cleaning of mangles or any part thereof;

‡ (viii) washing of saggars with a wash which yields to dilute hydrochloric acid more than five per cent. of its dry weight of a soluble lead compound calculated as

lead monoxide when determined in the manner described in the definition of *low solubility glaze*.

(b) No young person or child, other than a male young person who wedges clay only for his own use, shall be employed in the *wedging of clay*; and no woman shall be so employed without a certificate of *permission to work*.

(c) No young person or child shall be employed in the carrying of clay, or other systematic carrying or lifting work, without a certificate of *permission to work*, specifying the maximum weight which he or she may carry; and no young person or child so employed shall be allowed to lift or carry any weight in excess of that named in the certificate. Provided that:—

(i) No certificate shall permit the carrying of more than 30 lbs. by anyone under 16 years of age; and

(ii) No girl under 16 years of age and no boy under 15 years of age shall be allowed to carry clay, except that such a worker who is working for himself or herself, and is not an attendant of another worker, shall be allowed to carry such clay as is to be used by himself or herself in making articles of *pottery*.

(d) No female shall be employed for more than seven days as a wheel-turner for a thrower, without a certificate of *permission to work*.

(e) No girl under 16 years of age shall be employed as a lathe treader.

\*† (f) No young person or child shall be employed as a dipper.

\*† (g) No girl under 17 years of age and no boy under 16 years of age shall be employed as a dipper's assistant or ware cleaner.

\*† (h) No woman, young person, or child shall be employed as a glost placer, except in the placing of china furniture or electrical fittings; and no girl under 17 years of age and no boy under 16 years of age shall be employed as a glost placer in the placing of china furniture or electrical fittings. Except that male young persons over 16 years of age may be employed in the process of *glost placing* for the purpose of preparing saggars and assisting in the sagger-house during the drawing of ovens, provided that they shall not place any ware in the saggars.

\*(k) In *low solubility glaze factories*:—

(i) No person under 16 years of age shall be employed as a dipper;

(ii) No person under 15 years of age shall be employed as a dipper's assistant, ware cleaner, or glost placer.

(\*) (†) (l) Except as provided in Regulation 1 (k) (ii) no person under 16 years of age shall be employed in any process included in Part I of the Schedule; and no person under 15 years of age shall be employed in any process included in Part II of the Schedule.

(m) No female shall carry a sagger full of ware; but

(i) the moving of such a sagger from one part of a bench to a contiguous part of the same bench on the same level; or

(ii) the moving of such a sagger by any two females from a bench to the nearest convenient floor space in the same workroom if no saggings so moved are piled to a greater height than four feet, shall not be deemed to be a contravention of this requirement.

## 2. Periodical Examinations.

(\*) (†) (‡) (a) All persons employed in any process included in Part I of the Schedule shall be examined once in each calendar month by the *Surgeon*; and all persons employed in any process included in Part II of the Schedule shall be examined once in every twelve months by the *Surgeon*.

(b) All persons for whom certificates of *permission to work* are required by Regulation 1 shall be examined by the *Surgeon* within seven days of the commencement of their employment in a process in which such a certificate is required.

(c) All young persons and children employed in the carrying of clay, or other systematic carrying or lifting work, shall be re-examined by the *Surgeon* twice in the first period of six months, and once in each period of six months thereafter until they attain the age of 18.

(d) Any female examined for employment as a wheel-turner shall be presented for re-examination at a later date, if the *Surgeon* considers it necessary.

(\*) (†) (‡) (e) The fees for all medical examinations made in pursuance of these Regulations shall be paid by the employer and shall not be charged to the worker, whether he be in regular or casual employment. Provided that casual workers examined at the *Surgeon's* surgery shall pay a fee of one shilling for each certificate entered in the portable register; this fee shall be refunded by the occupier who first employs the worker after such examination; and the occupier shall record in the portable register the fact that the fee has been refunded.

(\*) (†) (‡) (f) A notice shall be affixed in a prominent place in the factory, showing clearly the time appointed for the *Surgeon's* periodical visit; and an amending notice shall be fixed forthwith if it is found necessary to alter the date or hour; wherever possible, not less than three days' notice of a change of date shall be given.

(\*) (†) (‡) (g) A private room shall be provided for all medical examinations. No one shall be present except such other medical man as the *Surgeon* may with the worker's consent admit; and in addition, in the case of a female, any one female relative may be present, or alternatively any one workwoman in the factory approved by the worker and the *Surgeon*.

(\*) (†) (‡) (h) No person *after suspension* shall be allowed to work in any process in which examination by the *Surgeon* is required by these Regulations, without a certificate of *permission to work*.

3. *Health, etc., Register.*

(\*) (†) (‡) (a) A register, in the form or forms prescribed, shall be kept, in which the *Surgeon* may enter the dates and results of his visits, the number of persons examined in pursuance of these Regulations, and particulars of any directions given by him. This register shall contain a correct list of all persons employed in the processes included in the Schedule, and of all persons for whom a certificate has been obtained in pursuance of Regulation 1; as well as all other particulars required to be entered in the register in pursuance of these Regulations.

(\*) (†) (‡) (b) The register shall be open to the inspection of any worker so far as concerns the entries relating to that worker. All such entries as indicate the general health of the worker shall be so expressed as to be readily understood both by occupiers and persons employed.

(\*) (†) (‡) (c) When a certificate of *suspension* or *permission to work* is sent by the *Surgeon* to the occupier, it shall be forthwith attached to the register, and shall be kept so attached until replaced by a personal entry by the *Surgeon* in the register.

4. *Overalls and Head-coverings.*

(\*) (‡) (a) The occupier shall provide and maintain suitable overalls and head-coverings for all persons employed in the processes included in the Schedule; except that head-coverings need not be provided for persons employed in *majolica painting* or *glost placing*.

(\*) (‡) (b) Head-coverings shall be adequate to protect the hair from dust, and shall be worn in such a manner as to be effective for this purpose.

(\*) (c) The occupier shall provide and maintain suitable aprons of a waterproof or similar material which can be sponged daily, for all dippers, dippers' assistants and ware cleaners; provided that, if the front of the overall supplied to any such worker in pursuance of these Regulations is made of a material which can be sponged daily, no separate apron need be provided for that worker.

(\*) (‡) (d) No person shall be allowed to work in any process included in the Schedule without wearing the above-named overalls and head-coverings, as well as aprons when provided in pursuance of the preceding paragraph; except that head-coverings need not be worn by persons employed in *majolica painting* or *glost placing*.

(\*) (c) All aprons made of waterproof or similar material, and all overalls or parts of overalls made of such material, shall be thoroughly cleaned daily by the wearers by sponging or other wet process. All other overalls or parts of overalls and all head-coverings shall be washed or renewed at least once a week; and the occupier shall provide for washing, renewal, and necessary repairs of all overalls and head-coverings to be done either at the

factory or at a laundry; and no worker shall be allowed to take home any overalls, head-coverings, or aprons provided in pursuance of these Regulations.

(\*) (‡) (f) All overalls, head-coverings, and aprons provided in pursuance of these Regulations, when not in use or being washed or repaired, shall be kept in proper custody; for this purpose there shall be provided a cupboard or cupboards or room or rooms suitably situated and sufficiently large to hold the overalls, head-coverings, and aprons; a separate peg shall be provided for each worker who is required by these Regulations to wear overalls.

### 5. *Outdoor Clothing.*

(\*) (‡) (a) A cupboard or cupboards or room or rooms shall be provided for workers to deposit clothing put off during working hours; the accommodation provided for this purpose shall be sufficient to hold the outdoor clothing of all workers who are required by these Regulations to wear overalls, and a separate peg shall be provided for each such worker; all such cupboards or rooms shall be entirely separated from any source of lead or other dust, and from any place provided for the keeping of overalls, head-coverings, or aprons, and shall be kept thoroughly clean by the occupier.

(\*) (‡) (b) The occupier shall make adequate provision for drying such outdoor clothing, if wet, during the time it is put off in working hours; this provision shall not be made in any place where there is any source of lead or other dust, or in any place provided for the keeping of overalls, head-coverings, or aprons, or in any mess-room provided in pursuance of these Regulations, unless such provision consists of cupboards arranged against the wall and ventilated directly to the outside air, in which case the space occupied by such cupboards shall not be deemed to be part of the mess-room accommodation, and the provision shall be subject to the approval of the Inspector of Factories for the district.

### 6. *Food.*

(\*) (‡) (a) No person shall be allowed to keep, or prepare, or partake of any food, drink, or tobacco, or to remain during meal-times in any place in which is carried on any process included in the Schedule, or the process of towing, or the process of tile-making by the compression of dust, or any other process which the Inspector of Factories for the district shall certify as sufficiently dusty to render the room in which it is carried on an unsuitable place, in his opinion, for persons to remain during meal-times.

(\*) (‡) (b) Mess-room accommodation shall be provided for the workers employed in the processes included in the Schedule, and for such others as are excluded from their own workrooms during meal-times in pursuance of paragraph (a) of this Regulation.

(\*) (†) (c) This accommodation shall consist of a clean, well-ventilated, and well-lighted room or rooms in which no manufacturing process is carried on; it shall be at or near the factory, and shall be sufficiently large to accommodate all the workers employed in the processes included in the Schedule and all others who are excluded from their own workrooms during meal-times in pursuance of paragraph (a) of this Regulation, allowing floor space in accordance with the following scale:—

In mess-rooms for—

6 persons and under	...	...	10½ sq. ft. per person.
Over 6 persons and up to 12	...	...	7½ „ „
„ 12 „ „	20	...	6 „ „
„ 20 „ „	28	...	5½ „ „
„ 28 „ „	any number		5 „ „

(\*) (†) (d) Provided that if the Inspector of Factories for the district shall certify that in his opinion the special circumstances of any factory are such as to render the provision of mess-room accommodation for all such workers unnecessary, it shall be sufficient to provide accommodation, calculated on the above scale, for such a proportion of all such workers as is named on the certificate of the Inspector; but in no case shall this proportion be less than one-third, subject, in cases of difficulty, to appeal to H.M. Chief Inspector of Factories; and the Inspector for the district shall have the right, at any time, to cancel or amend any such certificate.

(\*) (†) (e) All mess-rooms provided in pursuance of this Regulation shall be furnished with proper tables and seats; provision shall be made for maintaining a proper temperature not below 55 degrees Fahrenheit; and all mess-rooms shall be thoroughly cleaned daily at the occupier's expense.

(\*) (†) (f) No person shall be allowed to take into a mess-room any overall, head-covering, or apron, worn in a process included in the Schedule.

(\*) (†) (g) The washing conveniences prescribed by the Regulations shall not be maintained in any mess-room.

(\*) (†) (h) A suitable place for the deposit of food shall be provided for each worker using the mess-room. Such provision shall not be made in a room in which any manufacturing process is carried on, and shall be subject in each case to the approval of the Inspector of Factories for the district.

(\*) (†) (k) Adequate facilities shall be provided to enable workpeople to heat their food.

(\*) (†) (l) A supply of milk, or cocoa made with milk, shall be provided for all women and young persons working in processes included in Part I of the Schedule, who commence work before 9 a.m. Not less than half a pint shall be provided for each such worker at the expense of the occupier.

7. *Suppression of Dust.*

(a) The following processes shall not be carried on without the use of an *efficient exhaust draught*:—

- ‡ (i) The fettling of flat ware, whether china or earthenware, by towing or sandpapering, provided that this shall not apply to the occasional finishing of pieces of china or earthenware without the aid of mechanical power;
- ‡ (ii) The sand-sticking of sanitary ware;
- ‡ (iii) Any other process of fettling on a wheel driven by mechanical power, except where :
  - (a) the fettler is fettling, as an occasional operation, only ware of his or her own making; or
  - (b) the fettling is done wholly with a wet sponge or other moist material; or
  - (c) the fettling is done by the worker who has made the articles, whilst the latter are still in a moist state.
- ‡ (iv) The sifting of clay dust for making tiles or other articles by pressure, except where :
  - (a) this is done in a machine so enclosed as effectually to prevent the escape of dust; or
  - (b) the material to be sifted is so damp that no dust can be given off.
- ‡ (v) The pressing of tiles from clay dust, an exhaust opening being connected with each press; this clause shall also apply to the pressing from clay dust of articles other than tiles, unless the material is so damp that no dust is given off.
- ‡ (vi) The fettling of tiles made from clay dust by pressure, except where the fettling is done wholly on or with damp material; this clause shall also apply to the fettling of other articles made from clay dust, unless the material is so damp that no dust is given off.
- ‡ (vii) The processes of *bedding* and *flinting*.
- ‡ (viii) The brushing of earthenware biscuit, unless the process is carried on in a room provided with efficient general mechanical ventilation or other ventilation which is certified by the Inspector of Factories for the district as adequate, having regard to all the circumstances of the case.
- ‡ (ix) *Scouring* of biscuit ware which has been fired in powdered flint, except where this is done in machines so enclosed as effectually to prevent the escape of dust.
- ‡ (x) *Batting* of biscuit ware which has been fired in powdered flint.
- ‡ (xi) *Glaze blowing*

- \* † (xii) Ware cleaning after the application of glaze by dipping or other process, except as set forth later in this Regulation.
- ‡ (xiii) The preparation or weighing out of *flow material* which yields to dilute hydrochloric acid more than five per cent. of its dry weight of a soluble lead compound calculated as lead monoxide when determined in the manner described in the definition of *low solubility glaze*.
- ‡ (xiv) The lawning of dry colours, except where not more than an ounce at a time is lawned for use in painting.
- ‡ (xv) Ground laying, including the wiping off of colour after its application to the surface of the ware.
- ‡ (xvi) Colour dusting, whether under-glaze or on-glaze, including the wiping off of colour after its application to the surface of the ware.
- ‡ (xvii) Colour blowing or ærographing, whether under-glaze or on-glaze, including the wiping off of colour after its application to the surface of the ware.
- ‡ (xviii) The making of lithographic transfers, including the wiping off of colour after its application to the surface of the transfer sheets.

(b) In the process of mould-making, every bin or similar receptacle used for holding plaster of Paris shall be provided with an *efficient exhaust draught* so arranged as to prevent the escape of plaster of Paris dust into the air of the workplace; except where a cover is provided for the bin or other receptacle, and the plaster of Paris is conveyed in a sack, the mouth of which is tied and only loosened after it has been placed in the bin or other receptacle.

(c) The dry grinding of materials for pottery bodies shall be done either with an *efficient exhaust draught* for the removal of dust, or in machines so enclosed as effectually to prevent the escape of dust; except that it shall not be deemed necessary in pursuance of this Regulation to provide an exhaust draught to remove small amounts of dust given off at the hopper of an enclosed machine in the course of feeding the same, if an outlet into an exhaust duct or to the outside air is fitted to the receptacle into which the powdered material is delivered.

(d) In the process of sand-sticking of sanitary ware, suitable provision shall be made for collecting any material which falls on the floor.

‡ (e) In the process of making tiles from clay dust by pressure, supplies of material shall be conveyed to the work benches in such a manner as to disperse as little dust as possible into the air; clay dust shall not be carried into any press shop in sacks except where hoppers or similar receptacles are provided for receiving the clay dust, in which case a sack in sound repair shall be used and the mouth of the sack shall be tied and only loosened after it has been placed in the hopper or other receptacle, which shall



be provided with a cover. This clause shall also apply to the making from clay dust of articles other than tiles, unless the material is so damp that no dust is given off.

‡ (f) After one year from the date on which these Regulations come into force, biscuit flat ware which has been bedded for firing shall not be removed from the saggars after firing, except at a bench fitted with an efficient exhaust appliance for the removal of dust.

‡ (g) Flat-knocking and fired-flint-sifting shall be carried on only in enclosed receptacles, which shall be connected with an *efficient exhaust draught* unless so contrived as to prevent effectually the escape of dust.

\* (h) In the process of ware cleaning of earthenware after the application of glaze by dipping or other process, wherever it is practicable to use damp sponges or other damp materials they shall be provided in addition to the knife or other instrument, and shall be used.

\*† (k) Nothing in these Regulations shall render it compulsory to provide an exhaust draught for ware cleaning if this process is carried on entirely with the use of wet materials; or if the ware cleaning be done within 15 minutes after the moment when the glaze was applied; but an *efficient exhaust draught* shall always be provided and used if any dry materials or implements, such as knives or scrapers, are used after the glaze is dry or more than 15 minutes after the moment when the glaze was applied.

\* (l) In the process of ware cleaning, after the application of glaze by dipping or other process, sufficient arrangements shall be made for any glaze scraped off, which is not removed by the exhaust draught, to fall into water. All water troughs or other receptacles provided in pursuance of this clause shall be cleaned out and supplied with fresh water as often as necessary, and in no case less often than once a week; and no scrapings of glaze shall be allowed to collect in a dry condition on the sides of the water receptacle. Where grids or gratings are fitted over the water trough or other receptacle named in the foregoing paragraph, they shall be kept clean by repeated sponging or wiping with wet material during the time that the process of ware cleaning is being carried on. No boards or other articles shall be placed, even temporarily, on any such water trough, in such a way as to interfere with the efficient use of the trough.

(m) In all processes the occupier shall, as far as practicable, adopt efficient measures for the removal of dust and for the prevention of any injurious effects arising therefrom.

(n) Every process for which an exhaust draught is prescribed shall be carried on inside a hood or exhaust funnel; provided that, where the occupier can show that this is impracticable, it shall be sufficient if the work is done within the effective range of an exhaust opening.

8. *Respirators.*

(a) No person shall be allowed to work without wearing a suitable and efficient respirator, such as a damp sponge tied across the mouth and nostrils, in any of the following processes :—

(i) The emptying of sacks of plaster of Paris into a bin in a mould-making shop;

\* (ii) The weighing out, shovelling, or mixing of unfritted lead compounds, in the preparation or manufacture of frits, glazes or colours containing lead, or any process carried on in a room wherein any such weighing out, shovelling, or mixing has taken place within the previous 30 minutes;

unless an *efficient exhaust draught* is provided to prevent the escape of dust into the air of the workplace.

(b) All respirators required by this Regulation shall be provided and maintained in a cleanly state by the occupier; and each respirator shall bear the distinguishing mark of the worker to whom it is supplied.

9. *Ventilation.*

‡ (a) Every place in which any worker or workers are employed shall be thoroughly ventilated.

‡ (b) All workrooms in which articles are left to dry shall be ventilated in such a way as to ensure a continuous movement of the air in the room in a direction away from the workers and towards the articles in question.

‡ (c) All drying stoves shall be ventilated direct to the outside air by shafts having upward inclinations and terminating vertically, or by louvres in the roof, or by other effective means.

‡ (d) All mangles shall be so ventilated as to provide for the maintenance of a flow of air into the hot chamber from the adjoining workroom.

In the case of vertical or “ tower ” mangles :

(i) The pipes for heating the mangle shall be fixed above the top of any opening at which workers put in or take off ware ; and

(ii) There shall be a free outlet into the air above, so formed and placed as to ensure an outflow whatever the direction of the wind.

‡ (c) Fresh air shall, where practicable, be admitted to all workrooms by inlets placed along the sides of the room at a height of as nearly as possible 6 feet above the floor level, hopper opening being used for the purpose wherever possible.

‡ (f) Where it is not practicable to provide such fresh air inlets arrangements shall be made for the entry of an adequate amount of pure air by a flue with apertures at intervals along its length, or other means, which will secure an even distribution of the air through the room.

‡ (g) In no case shall fresh air inlets be so arranged that a draught can blow direct from them on to any worker.

‡ (h) Wherever the natural air currents are found to be insufficient without assistance to afford thorough ventilation, exhaust fans or other artificial means of creating a current of air shall be provided and maintained in use.

‡ (k) Where an exhaust draught is provided for the removal of dust generated in a manufacturing process, precautions shall be taken to prevent dust being drawn into the general atmosphere of the room from other sources of dust in places in the vicinity; communication with such places shall be stopped wherever possible, and the fresh air inlets hereinbefore mentioned shall be so arranged as to ensure that no extraneous dust is drawn towards the workers by the exhaust draught.

### 10. *Temperature.*

‡ (a) Such a condition of the atmosphere shall be maintained in all *workrooms* that the reading of the wet bulb thermometer shall not exceed 70 degrees Fahrenheit, except at such times as the reading of the wet bulb thermometer in the shade in the open air exceeds 65 degrees Fahrenheit.

‡ (b) A thermometer, suitably mounted for observing the wet bulb reading, shall be provided in every *workroom* in which any articles are allowed to dry, or in connection with which artificial heat is used in aid of the manufacturing process, whether in the *workroom* itself or in drying stoves or mangles or other appliances adjoining the *workroom*.

‡ (c) Wherever steam or hot water pipes pass through a *workroom* they shall be efficiently protected, and if not used for the purpose of heating that room, they shall be efficiently covered with non-conducting material.

‡ (d) The following Regulations shall apply to the drawing of ovens :—

(i) The temperature, whether taken at the bottom of the stage where the top drawer stands, or at any lower stage where men are working, shall not exceed 125 degrees Fahrenheit at any time when men are working in the oven.

(ii) Except that, in the case of any oven, in which—

(a) cooling dampers are in use, and in respect of which

(b) there has been no unnecessary delay in setting in the oven,

it shall be permissible, on the joint agreement of employer and employed, to suspend the above rule not more than four times in any period of twelve months; but such suspension of the rule shall be conditional on immediate notice being sent to the Inspector of Factories for the district, stating the name

or number of the oven which is being drawn at a temperature exceeding 125 degrees Fahrenheit, taken as above. For the purpose of this exception, every oven to which it applies shall be given a distinctive name or number which shall be recorded in the register. Particulars of any notice sent to the Inspector of Factories for the district in pursuance of this exception shall also be recorded in the register.

- (iii) When notice is given by the oven-men, whether verbally to the manager or occupier, or by handing in a written notice at the office before 5.30 p.m., to the effect that the oven-men wish to have the temperature tested before the oven is drawn next day, arrangements shall be made for a responsible representative of the occupier to be present for the purpose at the time when the drawing in question commences.
- (iv) The temperature of ovens shall also be taken on a demand being made by the oven-men at any time when they are engaged in drawing.

#### 11. *Lavatories.*

(\*) (†) (a) The occupier shall provide and continually maintain for the use of all persons employed in processes named in the Schedule, at least one lavatory basin for every five such persons. Each such basin shall be provided with a waste pipe and plug, or the basins shall be placed in a trough fitted with a waste pipe. There shall be a constant supply of hot and cold water laid on to each basin.

(\*) (†) (b) Or, in the place of basins, the occupier shall provide and maintain troughs of enamel or similar smooth impervious material, in good repair, of a total length of at least two feet for every five persons employed, fitted with waste pipes, and without plugs, with a sufficient supply of warm water constantly available from taps or jets above the trough at intervals of not more than two feet. Provided that if the Inspector of Factories for the district certifies that in his opinion it is not reasonably practicable for hot or warm water to be laid on to the lavatories in any factory or in any part of a factory, it shall be deemed to be sufficient if an adequate supply of hot water is provided as near as practicable to such lavatories. The Inspector of Factories for the district shall have the right at any time to cancel or amend any such certificate.

(\*) (†) (c) The lavatory shall be kept thoroughly cleaned at the cost of the occupier.

(\*) (†) (d) Before each meal and before the end of the day's work, at least ten minutes, in addition to the regular meal-times, shall be allowed for washing to each such person, provided that if the lavatory accommodation specially reserved for such persons exceeds that required by the preceding paragraphs, the time

allowance may be proportionately reduced, and that if there be one basin or two feet of trough for each such person, no allowance of time shall be required.

(\*) (†) (e) The lavatories shall be under cover and shall be fitted up as near as practicable to the places in which the workers for whom they are provided are employed.

(\*) (†) (f) There shall be in front of each washing basin, or trough a space for standing room which shall not be less in any direction than 21 inches.

(\*) (†) (g) Sufficient space shall be provided under cover in or adjoining the lavatory for such workers as use the lavatory while awaiting their turn to wash.

(\*) (†) (h) One roller towel, fastened in position, at least 15 square feet in area, shall be provided for every three workers, and shall be washed or renewed daily.

(\*) (†) (k) Or, one roller towel, fastened in position, at least 15 square feet in area, shall be provided for every nine workers, and shall be washed or renewed after every meal-time and at the close of the day's work.

(\*) (†) (l) Or, a towel at least 5 square feet in area shall be provided for each worker, and shall be washed or renewed daily; in this case a peg with the worker's name shall be provided for each towel.

(\*) (†) (m) One nail brush shall be provided for each basin or every two feet of trough, and shall be maintained in a cleanly and efficient condition. If fastened down, it shall be taken up once a week, and cleaned or renewed.

(\*) (†) (n) A sufficient supply of soap shall be always available at each basin, or every two feet of trough.

(\*) (†) (o) Separate lavatories for males and females shall be provided. An adjustable wooden partition across a lavatory shall be deemed to be sufficient separation, provided that it ensures complete privacy for females while washing.

## 12. Floors.

† (a) The floors of all slip-houses shall be kept thoroughly clean.

† (b) In all *potters' shops*, including such drying stoves as are entered by workpeople, and in all places where the following processes are carried on, viz. :—

\* Making or mixing of frits, glazes, or colours containing lead,

\*† Application of majolica, or other glaze, by blowing, painting, or any other process except dipping,

Preparation, or weighing out, of *flow material*,

Ground laying, including the wiping off of colour after this process,

Colour dusting	} whether on-glaze or under-glaze, including
Colour blowing	
	the wiping off of colour after either of
	these processes,

Colour grinding for colour blowers,  
Lithographic transfer making,  
the following Regulations shall apply :—

- (i) There shall be provided and maintained :—
  - (a) Either impervious floors ;
  - (b) Or wooden floors with a thoroughly smooth and sound surface, constructed in such a substantial manner as to be free from permanent sag, and maintained in such repair that they can be properly cleaned by a moist method, and that no dust can fall through into rooms below.
- (ii) The floors, when the rooms are in use, shall be thoroughly cleaned daily, by a moist method, by an adult male after work has ceased for the day, and before 3 a.m. next morning ; except that in rooms in which ground laying is done, the cleaning prescribed by this Regulation may be done before work commences in the morning, provided that in no case shall any work be carried on in the room within one hour after such cleaning as aforesaid has ceased.
- (iii) Scraps of clay and other débris, including any which have collected under benches, shall not be allowed to accumulate unduly, and all such scraps and débris shall be carried out at least once a day. Scraps of clay in *potters' shops* shall be damped before being carried out.

In all drying stoves which are entered by work-people, boxes shall be provided for the reception of broken or waste clay ware.

- (iv) Suitable provision shall be made for the storage of all moulds when not in use. In existing installations, the tops of drying stoves shall not be used for this purpose unless it is shown to the satisfaction of the Inspector of Factories for the district that no other suitable place is available. In any new erections, suitable provision shall be made without utilising the tops of stoves for this purpose, unless the top of the stove is made into a separate chamber.

‡ (c) The floors of all biscuit placing and glost placing shops shall be impervious, even floors of brick, flag or similar hard material, and shall be kept in good repair ; they shall be thoroughly sprinkled and swept by an adult male whenever the work of setting in an oven has ceased, and under any circumstances at least once a day.

\*†‡ (d) The floors of all dipping houses, dippers' drying-rooms, and ware cleaning rooms shall be washable impervious floors, and shall be thoroughly cleaned daily by an adult male, after work has ceased for the day, with a sufficient supply of water and a mop or similar implement : provided that, in the

case of china dippers' drying rooms, this cleaning may be done before work commences in the morning, instead of after work has ceased for the day.

The floors of all dipping houses, dippers' drying rooms, and ware-cleaning rooms erected after the date on which these Regulations come into force, shall be properly sloped towards a drain.

‡ (c) In any new erection where steam pipes are used for heating a drying stove, dippers' drying room, or any place where articles are left to dry, the pipes shall, if possible, be fixed in the form of a rack of horizontal pipes in a vertical plane. Where this is impossible, the pipes shall be fixed in such a position as to allow a thorough cleaning under and around them.

In existing installations, if it is impracticable to comply with the preceding paragraph, the steam pipes shall be enclosed in a box in such a manner as to permit of the thorough cleaning of all parts of the box on which persons may walk or stand, and adequate measures shall be taken to prevent dust escaping from within the box. Slides, drawers, trap-doors or other contrivances shall be provided wherever necessary to facilitate cleaning under pipes.

All stillages shall be so arranged as to allow the floor to be thoroughly cleaned underneath them.

(f) In all *workrooms* not specially mentioned in the foregoing paragraphs of this Regulation, the following Regulations shall apply :—

All floors shall be maintained in such repair that they can be properly cleaned by a moist method, and shall be so cleaned daily.

All ashes, dirt or other debris, including any which have accumulated under benches, shall be carried out daily.

(g) The above requirement as to the daily cleaning of floors by a moist method shall not apply to places where saggars, retorts or crucibles are made, or to those parts of floors on or immediately above which articles of *pottery* are necessarily left overnight, if adequate provision is made for the cleaning of the floors as soon as the articles are removed.

### 13. *Work Benches.*

The following Regulations shall apply to work benches in *potters' shops*, and in places where processes named in the Schedule are carried on :—

(\*) ‡ (a) Work benches, if not covered with sheet metal or constructed with an impervious surface, shall be strongly and solidly constructed of closely jointed timber, and the surface of the work benches shall be well maintained.

(\*) ‡ (b) All work benches in use shall be thoroughly cleaned daily by a moist method.

14. *Lead-house.*

\* (a) Raw lead compounds shall not be handled except with at least 5 per cent. of added moisture.

\* (b) They shall, further, be kept in their original packages until weighed out, and the tub or other receptacle containing them shall be so fitted either with a cover or a damp screen as to prevent the issue of any lead dust from its mouth.

\*† (c) In every lead-house, except such as are used for less than eight hours in any week, a special lavatory basin with a supply of hot and cold water, nail brush, soap and towel shall be provided and maintained; and a solution of soluble sulphides shall be provided in which workers in the lead-house shall rinse their hands after washing so as to show if they are free from lead.

15. *Dipping House, etc.*

\*† (a) In dipping houses, all parts of walls sufficiently near to any dipping tub to be splashed with glaze shall be tiled, or painted with washable paint, or otherwise treated in such a manner as to permit of thorough cleaning by a wet process.

\*† (b) The above-named parts of walls, as well as the dipping tubs and any other objects which are splashed with glaze, shall be thoroughly cleaned daily by a wet process.

(c) All dipping houses and ware cleaning rooms shall be well lighted; neither dipping nor ware cleaning shall be done in places which, in ordinary fine weather, are dependent on borrowed light or artificial light during the hours of daylight.

16. *Threading-up.*

\*†† In the process of threading-up, rubber or other washers, used to keep articles apart when being dipped, shall be thoroughly washed in a colander after each dipping. Wires shall also be washed after each dipping.

17. *Boards.*

\* (a) Every board on which dipped ware has been placed shall, on each occasion after it has been used for one set of articles and before being used for another, be thoroughly cleaned with clean water by an adult male.

\* (b) "Nailed" or "pegged" boards shall be cleaned under a strong jet of water; no new boards of this description shall be introduced except where necessary to hold china furniture or other special articles which cannot be carried on ribbed or plain boards.

(\*) (†) (c) Boards for use in processes included in Part I. of the Schedule shall be clearly marked by painting them red at the ends and for a distance of at least six inches from each end of the board on both sides, so as to distinguish them from other boards which do not come into contact with lead. Boards so marked shall not be used in any department unless they have



been thoroughly cleaned, and shall not be used in the clay departments under any circumstances. Boards not so marked shall not be taken into any place where a process included in Part I. of the Schedule is carried on; but this shall not apply to placing shops in which both biscuit and glost ware are being placed, provided that the boards used for biscuit ware are kept separate and returned to their respective departments without any contact with the boards used for glost ware.

### 18. *Mangles.*

\*‡ All mangle shelves shall be thoroughly cleaned by a wet process by an adult male on a fixed day in each week, after work has ceased for the day. The day on which this cleaning is to take place shall be fixed by entry in the register kept in pursuance of Regulation 3.

### 19. *Thimble Picking.*

(\*) (†) ‡ All material collected from floors or work benches shall be riddled in an enclosed receptacle before it is taken to a thimble picking room.

### 20. *Majolica Painting.*

The following Regulations shall apply to the process of *majolica painting* :—

- \*‡ (a) A sponge and bowl of clean water, to rinse the fingers shall be provided on the work bench beside each person employed in *majolica painting*.
- \*‡ (b) In all *majolica painting* shops where there is no adjoining lavatory accommodation, there shall be provided in the room a lavatory sink with a tap, a constant supply of water, and towels.
- \*‡ (c) All splashes of glaze falling on the benches, or surrounding objects, shall be immediately removed with a wet sponge or other wet material.
- \*‡ (d) No floor or work bench shall be deemed to have been thoroughly cleaned, in accordance with Regulation 12 or 13, unless all splashes of glaze have been completely removed.
- \*‡ (e) Mottling or any similar method of applying glaze, shall only be carried on under the Regulations applying to *majolica painting*.
- \*‡ (f) All cleaning and scraping, including panel-cutting, after *majolica* dipping, *painting*, or blowing, shall be deemed to be ware cleaning, and shall only be done in compliance with the rules for the latter process.

### 21. *Cotton-wool in ground Laying, Colour Dusting, and Lithographic Transfer Making.*

‡ All pieces of cotton-wool or similar materials which have been used in the process of ground laying, or colour dusting, or lithographic transfer making, shall be kept in a proper receptacle. All pieces of waste cotton-wool or similar materials which have been so used shall be immediately burnt.

22. *Aërographing.*

‡ (a) No short-sighted person shall be employed to do glaze or colour blowing, unless wearing suitable glasses. No person shall be employed as a glaze or colour blower, unless the *Surgeon* has entered in the *health register* a certificate stating that he has examined the worker's sight and is satisfied that he or she can be so employed without breach of this Regulation.

‡ (b) All hoods in which the blowing of glaze or colour is carried on shall be thoroughly cleaned daily by a wet process.

‡ (c) Glaze or colour blowing shall not be done with the mouth.

‡ (d) Decoration on unfired clay ware by means of coloured clay slips shall not be regarded as colour blowing for the purposes of any of the Regulations applying specially to the latter process.

23. *Lithographic Transfer Making.*

‡ Machines used in lithographic transfer making shall not be brushed down, but shall be cleaned either—

(a) with moist materials, such as oily rags, in such a manner as not to disperse any dust into the air; or

(b) by means of an exhaust current of air, such as that afforded by a vacuum-cleaner.

24. *Separation of Processes.*

(\*) (†) (‡) (a) *Thimble picking* or threading up shall not be carried on except in a place sufficiently separated from any process included in the Schedule.

(\*) (‡) (b) When a process included in the Schedule is being carried on in a room where other work is also done.

(i) Either the place where the scheduled process is carried on shall be screened off from the rest of the room by a partition not less than eight feet high,

(ii) Or all persons working in the room shall be deemed to be persons employed in the scheduled process.

25. *Hours of Employment.*

(a) No person employed in a process included in Part I of the Schedule, except *glost placing* and lithographic transfer making, shall be employed for more than four hours without an interval of at least half an hour for a meal.

No person shall be employed in the process of *glost placing* or in the process of lithographic transfer making for more than 4½ hours, or in any other process for more than 5 hours, without an interval of at least half an hour for a meal.

(\*) (‡) (b) No woman or young person who is employed in any process included in Part I of the Schedule shall be employed in the factory in any capacity for more than 48 hours in any week.

(\*) (c) No adult male who is employed as a dipper, dipper's assistant, or ware cleaner shall be employed in the factory in any capacity for more than 48 hours in any week, provided that where such an adult male worker has been employed in a process included in Part I of the Schedule, for not more than 8 hours in

any one day or 30 hours in all in a week, he may be employed during the same week on work not involving contact with lead up to a limit of 54 hours for that week.

(\*) (d) No adult male who is employed as a glost placer shall be employed in the factory in any capacity for more than 54 hours in any week.

(\*) (e) Except that it shall be permissible to employ adult male dippers, dippers' assistants, ware cleaners, and glost placers overtime in addition to the prescribed weekly periods of 48 and 54 hours; provided that such overtime shall not, in any factory to which these Regulations apply, exceed 4 hours in any week, or 36 hours in any period of twelve months. The occupier shall enter in the prescribed register particulars of all such overtime, and shall also send notice, with the prescribed particulars, to the Inspector of Factories for the district, before eight o'clock in the evening of any day when a man is employed overtime in pursuance of this exception. An occupier who avails himself of this exception shall, if called upon, produce to the Inspector of Factories for the district evidence of press of orders or other circumstance rendering the overtime necessary.

Adult male dippers, ware cleaners and glost placers may be employed, in addition to the above-named hours, as sitters-up with an oven after the termination of the period of employment on one day in the week and before the commencement of the period of employment on the next day; provided that no such worker shall be employed in any capacity within 12 hours of the cessation of the period of sitting-up.

(f) In *potters' shops*, and in any place where towing or any other dusty process is carried on, including any process for which a certificate by an Inspector of Factories has been given in pursuance of the first paragraph of Regulation 6, no woman or young person shall be employed for more than  $9\frac{1}{2}$  hours in any day or for more than  $6\frac{1}{2}$  hours on Saturday.

(g) All the above weekly and daily periods shall be the maximum permissible periods of actual work, exclusive of meal-times.

## 26. *Affixing of Regulations.*

(\*) (†) In addition to the printed copies of these Regulations required to be kept posted up in pursuance of Section 86 of the Factory and Workshop Act, 1901,<sup>(1)</sup> there shall be kept constantly affixed in every *potters' shop* and in every place in which any process included in the Schedule is carried on, a notice printed in bold type, so that it can be easily read, setting forth those portions of the Regulations which apply to that particular workplace.

## 27. *Observance of Regulations.*

(a) A person or persons shall be appointed who shall see to the observance, throughout the factory, of the Regulations, and whose duty it shall be to carry out systematic inspection of the working of all the Regulations in the departments for which they are

(1) Edw. 7, c. 22.

individually responsible. The names of the persons so appointed shall be recorded in the register.

(b) Each person so appointed shall be a competent person fully conversant with the meaning and application of the Regulations in so far as they concern the departments for which he is responsible. He shall keep in the factory a book in which he shall record any breach of the Regulations, or any failure of the apparatus (fans, etc.) needed for carrying out the provisions, that he may have observed, or that may have been brought to his notice within the preceding 24 hours, together with a statement of the steps then taken to remedy such defects or to prevent the recurrence of such breach. Each entry in such book shall be dated and initialled by the person appointed, who at the end of each week shall make a further entry stating that the inspection required by paragraph (a) has been carried out, and that all the defects observed or brought to his notice have been recorded in the book. Such book shall be kept in the factory for at least six months after the latest entry therein.

(c) Accurate extracts, clearly and legibly expressed, shall be made of these entries once a week, and signed by the occupier or someone whom he may appoint, and displayed during the following week in a conspicuous place in the departments to which they refer, and copies of all such extracts shall for the same time be displayed in a conspicuous place in the mess-rooms.

### 28. *Samples for Analysis.*

(a) The occupier shall allow any of His Majesty's Inspectors of Factories to take at any time sufficient samples for analysis of any material in use or mixed for use.

(b) Provided that the occupier may at the time when the sample is taken, and on providing the necessary appliances, require the Inspector to take, seal, and deliver to him a duplicate sample.

(c) But no analytical result shall be disclosed or published in any way except such as shall be necessary to establish a breach of these Regulations.

## PART II.

### DUTIES OF PERSONS EMPLOYED.

#### 29. *Periodical Examinations.*

(\*) (†) (‡) (a) All persons employed in the processes included in the Schedule shall present themselves at the appointed times for examination by the *Surgeon* as provided in Regulation 2.

(\*) (†) (‡) (b) No person after *suspension* shall work in any process in which examination by the *Surgeon* is required by these Regulations without a certificate of *permission to work*.

#### 30. *Overalls, etc.*

(\*) (‡) (a) All persons employed in any process included in the Schedule shall, when at work, wear overalls, head-coverings, and aprons, as required by Regulation 4. The said overalls, head-coverings and aprons shall not be worn outside the factory or

workshop, and shall not be removed therefrom except for the purpose of being washed or repaired. No overalls, head-coverings or aprons, provided in pursuance of Regulation 4, shall, under any circumstances, be taken to a worker's home.

(\*) (‡) (b) The head-coverings provided in accordance with Regulation 4, shall be worn in such a manner as effectually to protect the hair from dust, and the hair must be so arranged as to permit of this.

(\*) (‡) (c) The overalls, head-coverings, and aprons, when not being worn, and clothing put off during working hours, shall be deposited in the respective places provided by the occupier for such purposes under these Regulations.

(d) Respirators shall be worn as required by Regulation 8.

### 31. *Food.*

(\*) (‡) (a) No person shall introduce, keep, prepare, or partake of any food, drink, or tobacco, or remain during meal-times in any place in which is carried on any process included in the Schedule, or the process of towing, or the process of tile-making by the compression of dust, or any other process which the Inspector of Factories for the district shall certify as sufficiently dusty to render the room in which it is carried on an unsuitable place, in his opinion, for persons to remain during meal-times.

(\*) (‡) (b) Every worker for whom milk or cocoa is provided in accordance with Regulation 6 shall drink the same, unless a medical certificate is produced showing cause for exemption from this requirement.

### 32. *Ventilation.—Dust.*

No person shall in any way interfere, without the knowledge and concurrence of the occupier or manager, with the means and appliances provided by the employers for ventilation, and for the removal of dust.

### 33. *Washing.*

(\*) (‡) (a) No person employed in any process included in the Schedule shall leave the works or partake of meals without previously and carefully cleaning and washing his or her hands.

(\*) (‡) (b) No person employed shall remove or damage the washing basins or conveniences provided under these Regulations.

### 34. *Cleaning of Work Places.*

The persons appointed by the occupiers shall clean the several floors, walls, work benches, appliances and other objects regularly as prescribed in these Regulations.

### 35. Boards.

\* (a) The boards used in the dipping house, dipper's drying room, or glost placing shop shall not be used in any other department, except after being cleaned, as directed in Regulation 17.

\* (b) No board on which dipped ware has been placed shall be used for a second set of dipped articles until it has been thoroughly cleaned, in accordance with Regulation 17.

Where a convenient grid or other suitable contrivance is provided for depositing such boards after use and before being cleaned, the worker who has removed the ware from any such board shall place the board thereon.

(\*) (c) Boards which are marked for use in lead processes shall not be used in any department unless they have been thoroughly cleaned, and shall not be used in the clay departments under any circumstances.

### 36. Avoidance of Dust, etc.

Every worker shall so conduct his or her work as to comply strictly with these Regulations, and to avoid, as far as practicable, making or scattering dust, or refuse, or causing accumulation of such.

*R. McKenna,*

One of His Majesty's Principal  
Secretaries of State.

Home Office,

Whitehall.

2nd January, 1913.

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### *Schedule.*

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#### PART I.

#### *Lead Processes.*

\* (a) Making or mixing of frits, glazes, or colours containing lead.

\* (b) Dipping or other process carried on in the dipping house.

\* (c) Application of majolica, or other glaze, by blowing, painting, or any other process except dipping.

\* (d) Drying after the application of glaze by dipping, blowing, painting, or other process.

\* (e) Ware cleaning after the application of glaze by dipping, blowing, painting, or other process.

\* (f) Placing of ware on cranks or similar articles prior to their transfer to saggers or kilns for the glost firing.

\* (g) *Glost placing*.

‡ (h) Washing of saggers with a wash which yields to dilute hydrochloric acid more than five per cent. of its dry weight of a soluble lead compound calculated as lead monoxide when determined in the manner described in the definition of *low solubility glaze*.

‡ (k) Preparation, or weighing-out, of *flow material*.

‡ (l) Ground laying, including the wiping off of colour after this process.

‡ (m) Colour dusting } whether on-glaze or under-glaze, in-  
 ‡ (n) Colour blowing } cluding the wiping off of colour after  
                                   } either of these processes.

‡ (o) Colour grinding for colour blowers.

‡ (p) Lithographic transfer making.

‡ (q) Any other process in which materials containing lead are used or handled in the dry state, or in the form of spray, or in suspension in liquid other than oil or similar medium; provided that the *stopping of biscuit ware* with a material containing lead shall not be deemed to be a process included in this schedule.

## PART II.

### *Other Processes.*

‡ (r) *Scouring* of biscuit ware which has been fired in powdered flint.

‡ (s) Emptying of biscuit ware which has been fired in powdered flint, from the baskets or other receptacles in which it has been conveyed to the biscuit warehouse or scouring shop.



**REGULATIONS (GREAT BRITAIN).<sup>(1)</sup>****For the tinning of Metal Hollow-ware, Iron Drums, and Harness Furniture.**

(1909. No. 720.)

Whereas the coating of metal articles with a mixture of tin and lead, or lead alone, has been certified in pursuance of Section 79 of the Factory and Workshop Act, 1901, to be dangerous; I hereby in pursuance of the powers conferred on me by that Act make the following Regulations and direct that they shall apply to all factories and workshops where *tinning* is carried on in the manufacture of metal hollow-ware, iron drums, and harness furniture.

Provided that these Regulations shall not apply to :—

- (a) Any process in silver plating.
- (b) Any process in which a soldering iron is used.
- (c) Any other process if and so far as it is exempted by written certificate of the Chief Inspector of Factories, on the ground that he is satisfied that any of these Regulations are not required for the protection of the persons employed, by reason of the intermittency or infrequency of the *tinning* or other special circumstances.

Any such certificate of exemption shall be subject to the conditions therein prescribed and may be revoked at any time.

These Regulations shall come into force on October 1st, 1909, except that Regulation 1 shall come into force on April 1st, 1910.

*Definitions.<sup>(2)</sup>*

In these Regulations :—

- “ *Tinning* ” means the dipping and wiping of any metal in the process of coating it with a mixture of tin and lead or lead alone where hydrochloric acid or any salt of that acid is used.
- “ *Mounting*,” “ *Denting*,” and “ *Scouring* ” means the mounting, denting and scouring of hollow-ware articles tinned on the outer surface.
- “ *Surgeon* ” means the Certifying Factory Surgeon of the District or a duly qualified medical practitioner appointed by written certificate of the Chief Inspector of Factories, which appointment shall be subject to such conditions as may be specified in that certificate.
- “ *Suspension* ” means suspension from employment in *tinning* by written certificate in the Health Register signed by the *Surgeon*.

(<sup>1</sup>) These Regulations were gazetted July 2, 1909.

(<sup>2</sup>) Terms to which defined meanings are given are printed throughout in italics



“ *Efficient Draught* ” means localised ventilation effected by heat or mechanical means for the removal of fumes or dust so as to prevent them as far as practicable from escaping into the air of any room in which work is carried on.

No draught shall be deemed efficient which fails so to remove smoke generated at the point where such fumes or dust originate.

#### *Duties.*

It shall be the duty of the occupier to observe Part I of these Regulations.

It shall be the duty of all persons employed to observe Part II of these Regulations.

### PART I.

#### *Duties of Employers.*

1. No *tinning* shall be carried on except under an *efficient draught*.

The article to be tinned shall not be removed from such draught from the time when dipping is commenced until wiping is completed.

This Regulation shall not apply to the wiping of sheet metal 18 inches or more in length, where the person employed is wiping such sheet metal for his own use in some other process of his work.

2. No person under 16 years of age shall be employed in *tinning*.

3. The skimmings from the dipping bath shall not be removed from under the *efficient draught* until they have been placed in a covered receptacle. When removed they shall not be deposited in any room in which work is carried on.

4. The dust and refuse collected from the floor shall not be deposited in any room in which work is carried on.

5. A Health Register containing the names of all persons employed in *tinning* shall be kept in a form approved by the Chief Inspector of Factories.

6. Every person employed in *tinning* shall be examined by the *Surgeon* once in every three months (or at such shorter or longer intervals as may be prescribed in writing by the Chief Inspector of Factories) on a day of which due notice shall be given to all concerned.

The *Surgeon* shall have the power of suspension as regards all persons employed in *tinning*, and no such person after *suspension* shall be employed in *tinning* without written sanction from the *Surgeon* entered in the Health Register.

7. There shall be provided for the use of all women employed in *tinning* :

(a) a cloak-room, or other suitable place, separate from any room in which work is carried on, for clothing put off during working hours ;

(b) aprons or other equivalent protection.

8. There shall be provided for the use of all persons employed in *tinning*, *mounting*, *denting*, or *scouring*, a room separate from any room in which such work is carried on, where such persons may have meals, unless the works are closed during meal hours.

9. There shall be provided and maintained in a cleanly state and good repair for the use of all persons employed in *tinning*, *mounting*, *denting*, or *scouring*, a lavatory, under cover, with a sufficient supply of clean towels, renewed daily, and of soap and nail brushes, and with either :—

(a) A trough with a smooth impervious surface, fitted with a waste pipe without plug, and of such length as to allow at least two feet for every five persons, and having a constant supply of warm water from taps or jets above the trough at intervals of not more than two feet ; or,

(b) At least one lavatory basin for every five such persons, fitted with a waste pipe and plug, and having either a constant supply of hot and cold water or warm water laid on, or (if a constant supply of heated water be not reasonably practicable) a constant supply of cold water laid on, and a supply of hot water always at hand when required for use by persons employed.

## Part II.

### *Duties of Persons Employed.*

10. Every person employed in *tinning* shall present himself at the appointed time for examination by the *Surgeon* as provided in Regulation 6.

11. No person employed in *tinning* shall :—

(a) After *suspension*, work at *tinning* without written sanction from the *Surgeon* entered in the Health Register ; or,

(b) Interfere in any way, without the concurrence of the occupier or manager, with the means and appliances provided for the removal of dust or fumes, and for the carrying out of these Regulations.

12. Every person employed in *tinning*, *mounting*, *denting*, or *scouring* shall wash the hands before partaking of food or leaving the premises.

13. No person employed in *tinning*, *mounting*, *denting*, or *scouring* shall keep or prepare or partake of any food or alcoholic drink in any room in which such work is carried on.

H. J. Gladstone,

One of His Majesty's Principal  
Secretaries of State

Home Office, Whitehall,  
30th June, 1909.

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**REGULATIONS (GREAT BRITAIN).<sup>(1)</sup>****For the Manufacture of Electric Accumulators.**

(1903. No. 1004.)

Whereas the manufacture of electric accumulators has been certified in pursuance of Section 79 of the Factory and Workshop Act, 1901, to be dangerous;

I hereby, in pursuance of the powers conferred on me by that Act, make the following Regulations, and direct that they shall apply to all factories and workshops or parts thereof in which electric accumulators are manufactured.

In these Regulations "lead process"<sup>(2)</sup> means pasting, casting, lead burning, or any work involving contact with dry compounds of lead.

Any approval given by the Chief Inspector of Factories in pursuance of these Regulations shall be given in writing, and may at any time be revoked by notice in writing signed by him.

*Duties of Occupier.*

1. Every room in which casting, pasting or lead burning is carried on shall contain at least 500 cubic feet of air space for each person employed therein, and in computing this air space, no height above 14 feet shall be taken into account.

These rooms and that in which the plates are formed shall be capable of through ventilation. They shall be provided with windows made to open.

2. Each of the following processes shall be carried on in such manner and under such conditions as to secure effectual separation from one another and from any other process:—

- (a) Manipulation of dry compounds of lead;
- (b) Pasting;
- (c) Formation, and lead burning necessarily carried on therewith;
- (d) Melting down of old plates.

Provided that manipulation of dry compounds of lead carried on as in Regulation 5 (b) need not be separated from pasting.

3. The floors of the rooms in which manipulation of dry compounds of lead or pasting is carried on shall be of cement or similar impervious material, and shall be kept constantly moist while work is being done.

The floors of these rooms shall be washed with a hose pipe daily.

4. Every melting pot shall be covered with a hood and shaft so arranged as to remove the fumes and hot air from the workrooms.

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<sup>(1)</sup> These Regulations were gazetted November 24, 1903.

<sup>(2)</sup> The term "lead process" to which a defined meaning is given is printed throughout in italics.

Lead ashes and old plates shall be kept in receptacles specially provided for the purpose.

5. Manipulation of dry compounds of lead in the mixing of the paste or other processes shall not be done except (a) in an apparatus so closed, or so arranged with an exhaust draught, as to prevent the escape of dust into the workroom; or (b) at a bench provided with (1) efficient exhaust draught and air guide so arranged as to draw the dust away from the worker, and (2) a grating on which each receptacle of the compound of lead in use at the time shall stand.

6. The benches at which pasting is done shall be covered with sheet lead or other impervious material, and shall have raised edges.

7. No woman, young person, or child shall be employed in the manipulation of dry compounds of lead or in pasting.

8.—(a) A duly qualified medical practitioner (in these Regulations referred to as the “Appointed Surgeon”) who may be the Certifying Surgeon shall be appointed by the occupier, such appointment unless held by the Certifying Surgeon to be subject to the approval of the Chief Inspector of Factories.

(b) Every person employed in a *lead process* shall be examined once a month by the Appointed Surgeon, who shall have power to suspend from employment in any *lead process*.

(c) No person after such suspension shall be employed in a *lead process* without written sanction entered in the Health Register by the Appointed Surgeon. It shall be sufficient compliance with this Regulation for a written certificate to be given by the Appointed Surgeon and attached to the Health Register, such certificate to be replaced by a proper entry in the Health Register at the Appointed Surgeon's next visit.

(d) A Health Register in a form approved by the Chief Inspector of Factories shall be kept, and shall contain a list of all persons employed in *lead processes*. The Appointed Surgeon will enter in the Health Register the dates and results of his examinations of the persons employed and particulars of any directions given by him. He shall on a prescribed form furnish to the Chief Inspector of Factories on the 1st day of January in each year a list of the persons suspended by him during the previous year, the cause and duration of such suspension, and the number of examinations made.

The Health Register shall be produced at any time when required by H.M. Inspectors of Factories or by the Certifying Surgeon or by the Appointed Surgeon.

9. Overalls shall be provided for all persons employed in manipulating dry compounds of lead or in pasting.

The overalls shall be washed or renewed once every week.

10. The occupier shall provide and maintain :—

(a) a cloak-room in which workers can deposit clothing put off during working hours. Separate and suitable arrangements shall be made for the storage of the overalls required in Regulation 9 ;

(b) a dining-room unless the factory is closed during meal hours.

11. No person shall be allowed to introduce, keep, prepare or partake of any food, drink, or tobacco, in any room in which a *lead process* is carried on. Suitable provisions shall be made for the deposit of food brought by the workers.

This Regulation shall not apply to any sanitary drink provided by the occupier and approved by the Appointed Surgeon.

12. The occupier shall provide and maintain for the use of the persons employed in *lead processes* a lavatory, with soap, nail brushes, towels, and at least one lavatory basin for every five such persons. Each such basin shall be provided with a waste pipe, or the basins shall be placed on a trough fitted with a waste pipe. There shall be a constant supply of hot and cold water laid on to each basin.

Or, in the place of basins the occupier shall provide and maintain troughs of enamel or similar smooth impervious material, in good repair, of a total length of two feet for every five persons employed, fitted with waste pipes, and without plugs, with a sufficient supply of warm water constantly available.

The lavatory shall be kept thoroughly cleansed and shall be supplied with a sufficient quantity of clean towels once every day.

13. Before each meal and before the end of the day's work, at least ten minutes, in addition to the regular meal times, shall be allowed for washing to each person who has been employed in the manipulation of dry compounds of lead or in pasting.

Provided that if the lavatory accommodation specially reserved for such persons exceeds that required by Regulation 12, the time allowance may be proportionately reduced, and that if there be one basin or two feet of trough for each such person this Regulation shall not apply.

14. Sufficient bath accommodation shall be provided for all persons engaged in the manipulation of dry compounds of lead or in pasting, with hot and cold water laid on, and a sufficient supply of soap and towels.

This rule shall not apply if in consideration of the special circumstances of any particular case, the Chief Inspector of Factories approves the use of local public baths when conveniently near, under the conditions (if any) named in such approval.

15. The floors and benches of each workroom shall be thoroughly cleansed daily, at a time when no other work is being carried on in the room.

*Duties of Persons Employed.*

16. All persons employed in *lead processes* shall present themselves at the appointed times for examination by the Appointed Surgeon as provided in Regulation 8.

No persons after suspension shall work in a *lead process*, in any factory or workshop in which electric accumulators are manufactured, without written sanction entered in the Health Register by the Appointed Surgeon.

17. Every person employed in the manipulation of dry compounds of lead or in pasting shall wear the overalls provided under Regulation 9. The overalls, when not being worn, and clothing put off during working hours, shall be deposited in the places provided under Regulation 10.

18. No person shall introduce, keep, prepare, or partake of any food, drink (other than any sanitary drink provided by the occupier and approved by the Appointed Surgeon), or tobacco, in any room in which a *lead process* is carried on.

19. No person employed in a *lead process* shall leave the premises or partake of meals without previously and carefully cleaning and washing the hands.

20. Every person employed in the manipulation of dry compounds of lead or in pasting shall take a bath at least once a week.

21. No person shall in any way interfere, without the concurrence of the occupier or manager, with the means and appliances provided for the removal of the dust or fumes, and for the carrying out of these Regulations.

These Regulations shall come into force on the 1st day of January, 1904.

A. Akers-Douglas,

One of His Majesty's Principal  
Secretaries of State.

Home Office, Whitehall,

21st November, 1903.

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**REGULATIONS (GREAT BRITAIN).<sup>(1)</sup>****For Vitreous Enamelling of Metal or Glass.**

(1908. No. 1258.)

Whereas the process of vitreous *enamelling* of metal or glass has been certified in pursuance of section 79 of the Factory and Workshop Act, 1901, to be dangerous;

I hereby, in pursuance of the powers conferred on me by that Act, make the following Regulations, and direct that they shall apply to all factories and workshops in which vitreous *enamelling* of metal or glass is carried on.

Provided that nothing in these Regulations shall apply to—

- (a) the *enamelling* of jewellery or watches; or
- (b) the manufacture of stained glass; or
- (c) *enamelling* by means of glazes or colours containing less than 1 per cent. of lead.

These Regulations shall come into force on 1st April, 1909.

*Definitions.*<sup>(2)</sup>

In these Regulations—

“ *Enamelling* ” means crushing, grinding, sieving, dusting or laying on, brushing or woolling off, spraying, or any other process for the purpose of vitreous covering and decoration of metal or glass;

“ *Employed* ” means employed in *enamelling*;

“ *Surgeon* ” means the Certifying Factory Surgeon of the district or a duly qualified medical practitioner appointed by written certificate of the Chief Inspector of Factories, which appointment shall be subject to such conditions as may be specified in that certificate;

“ *Suspension* ” means suspension by written certificate in the Health Register, signed by the *Surgeon*, from employment in any *enamelling* process.

*Duties.*

It shall be the duty of the occupier to observe Part I of these Regulations.

It shall be the duty of all persons *employed* to observe Part II of these Regulations.

(1) These Regulations were gazetted December 22, 1908.

(2) Terms to which defined meanings are given are printed throughout in italics.

## PART I.

*Duties of Employers.*

1. Every room in which any *enamelling* process is carried on—
  - (a) shall contain at least 500 cubic feet of air space for each person *employed* therein, and in computing this air space no height above 14 feet shall be taken into account;
  - (b) shall be efficiently lighted, and shall for this purpose have efficient means of lighting both natural and artificial.
2. In every room in which any *enamelling* process is carried on—
  - (a) the floors shall be well and closely laid, and be maintained in good condition;
  - (b) the floors and benches shall be cleansed daily and kept free of collections of dust.
3. No *enamelling* process giving rise to dust or spray shall be done save either—
  - (a) under conditions which secure the absence of dust and spray; or
  - (b) with an efficient exhaust so arranged as to intercept the dust or spray and prevent it from diffusing into the air of the room.
4. Except in cases where glaze is applied to a heated metallic surface, dusting or laying on, and brushing or woolling off, shall not be done except over a grid with a receptacle beneath to intercept the dust falling through.
5. If firing is done in a room not specially set apart for the purpose, no person shall be *employed* in any other process within 20 feet from the furnace.
6. Such arrangements shall be made as shall effectually prevent gases generated in the muffle furnaces from entering the work-rooms.
7. No child or young person under 16 years of age shall be *employed* in any *enamelling* process.
8. A Health Register, containing the name of all persons *employed* shall be kept in a form approved by the Chief Inspector of Factories.
9. Every person *employed* shall be examined by the *Surgeon* once in every three months (or at such other intervals as may be prescribed in writing by the Chief Inspector of Factories) on a date of which due notice shall be given to all concerned.



10. The *Surgeon* shall have power of *suspension* as regards all persons *employed*, and no person after *suspension* shall be *employed* without written sanction from the *Surgeon* entered in the Health Register.

11. There shall be provided and maintained for the use of all persons *employed*—

- (a) suitable overalls and head-coverings, which shall be collected at the end of every day's work, and be cleaned or renewed at least once every week;
- (b) a suitable place, separate from the cloakroom and meal-room for the storage of the overalls and head-coverings;
- (c) a suitable cloakroom for clothing put off during working hours;
- (d) a suitable mealroom separate from any room in which *enamelling* processes are carried on, unless the works are closed during meal hours.

12. There shall be provided and maintained in a cleanly state and in good repair, for the use of all persons *employed*, a lavatory, under cover, with a sufficient supply of clean towels, renewed daily, and of soap and nail brushes, and with either—

- (a) a trough with a smooth impervious surface, fitted with a waste pipe without plug, and of such length as to allow at least two feet for every five such persons, and having a constant supply of warm water from taps or jets above the trough at intervals of not more than two feet; or
- (b) at least one lavatory basin for every five such persons, fitted with a waste pipe and plug or placed in a trough having a waste pipe, and having either a constant supply of hot and cold water or warm water laid on, or (if a constant supply of heated water be not reasonably practicable) a constant supply of cold water laid on and a supply of hot water always at hand when required for use by persons *employed*.

13. The occupier shall allow any of H.M. Inspectors of Factories to take at any time sufficient samples for analysis of any *enamelling* material in use or mixed for use.

Provided that the occupier may at the time when the sample is taken, and on providing the necessary appliances, require the Inspector to take, seal and deliver to him a duplicate sample.

No results of any analysis shall be published without the consent of the occupier, except such as may be necessary to prove the presence of lead when there has been infraction of the Regulations.

## PART II.

*Duties of Persons Employed.*

14. Every person *employed* shall---

- (a) present himself at the appointed time for examination by the *Surgeon* as provided in Regulation 9;
- (b) wear the overall and head-covering provided under Regulation 11 (a), and deposit them and clothing put off during working hours, in the places provided under Regulation 11 (b) and (c);
- (c) carefully clean the hands before partaking of any food or leaving the premises;
- (d) so arrange the hair that it shall be effectually protected from dust by the head-covering.

15. No person *employed* shall—

- (a) after *suspension*, work in any *enamelling* process without written sanction from the *Surgeon* entered in the Health Register;
- (b) introduce, keep, prepare, or partake of any food, drink, or tobacco, in any room in which an *enamelling* process is carried on;
- (c) interfere in any way, without the concurrence of the occupier or manager, with the means and appliances provided for the removal of dust or fumes, and for the carrying out of these Regulations.

*H. J. Gladstone,*

One of His Majesty's Principal  
Secretaries of State.

Home Office, Whitehall,

18th December, 1908.

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**REGULATIONS (GREAT BRITAIN).<sup>(1)</sup>****For the Heading of Yarn Dyed by means of a Lead Compound.**

(1907. No. 616.)

Whereas the process of *heading* of yarn dyed by means of a lead compound has been certified in pursuance of section 79 of the Factory and Workshop Act, 1901, to be dangerous.

I hereby, in pursuance of the powers conferred on me by that Act, make the following Regulations, and direct that they shall apply to all factories in which the said process is carried on.

Provided that if the Chief Inspector of Factories is satisfied, with regard to any such factory, that the *heading* of yarn dyed by means of a lead compound will not occupy more than three hours in any week, he may, by certificate, suspend Regulations 2, 3, 4, 7 (*a*), and 8 (*a*), or any of them. Every such certificate shall be in writing, signed by the Chief Inspector of Factories, and shall be revocable at any time by further certificate.

*Definitions.*<sup>(2)</sup>

“ *Heading* ” means the manipulation of yarn dyed by means of a lead compound over a bar or post, and includes picking, making-up, and noddling.

“ *Employed* ” means employed in *heading* of yarn dyed by means of a lead compound.

“ *Surgeon* ” means the Certifying Factory Surgeon of the district or a duly qualified medical practitioner appointed by certificate under the hand of the Chief Inspector of Factories, which appointment shall be subject to such conditions as may be specified in that certificate.

“ *Suspension* ” means suspension by written certificate in the Health Register, signed by the *Surgeon*, from employment in *heading* of yarn dyed by means of a lead compound.

*Duties.*

It shall be the duty of the occupier to observe Part I of these Regulations.

It shall be the duty of all persons *employed* to observe Part II of these Regulations.

**PART I.***Duties of Employers.*

1. No yarn dyed by means of a lead compound shall be *headed* unless there be an efficient exhaust draught so arranged as to

(1) These Regulations were gazetted August 13, 1907.

(2) Terms to which defined meanings are given are printed throughout in italics.

draw the dust away from the worker, as near as possible to the point of origin. The speed of the draught at the exhaust opening shall be determined at least once in every three months and recorded in the General Register.

2. No person under 16 years of age shall be *employed*.

3. A Health Register, containing the names of all persons *employed*, shall be kept in a form approved by the Chief Inspector of Factories.

4. Every person *employed* shall be examined by the *Surgeon* once in every three months (or at shorter intervals if and as required in writing by the Chief Inspector of Factories) on a date of which due notice shall be given to all concerned.

The *Surgeon* shall have power of *suspension* as regards all persons *employed*, and no person after *suspension* shall be *employed* without written sanction from the *Surgeon* entered in the Health Register.

5. There shall be provided and maintained for the use of all persons *employed*—

(a) a suitable cloakroom for clothing put off during working hours;

(b) a suitable meal-room separate from any room in which *heading* of yarn dyed by means of a lead compound is carried on, unless the works are closed during meal hours;

and, if so required by notice in writing from the Chief Inspector of Factories,

(c) suitable overalls and head-coverings which shall be collected at the end of every day's work, and be washed and renewed at least once every week;

(d) a suitable place, separate from the cloakroom and meal-room, for the storage of the overalls and head-coverings.

6. There shall be provided and maintained in a cleanly state and in good repair, for the use of all persons *employed*, a lavatory, under cover, with a sufficient supply of clean towels, renewed daily, and of soap and nail brushes, and with either—

(a) a trough with a smooth impervious surface, fitted with a waste pipe without plug, and of such length as to allow at least two feet for every five such persons, and having a constant supply of warm water from taps or jets above the trough at intervals of not more than two feet; or

(b) at least one lavatory basin for every five such persons, fitted with a waste pipe and plug or placed in a trough

having a waste pipe, and having either a constant supply of hot and cold water or warm water laid on, or (if a constant supply of heated water be not reasonably practicable) a constant supply of cold water laid on and a supply of hot water always at hand when required for use by persons *employed*.

## PART II.

### *Duties of Persons Employed.*

#### 7. Every person *employed* shall—

- (a) present himself at the appointed time for examination by the *Surgeon* as provided in Regulation 4;
- (b) wear the overall and head-covering (provided in pursuance of Regulation 5 (c) ) while at work, and shall remove them before partaking of food or leaving the premises, and shall deposit in the cloakroom, provided in pursuance of Regulation 5 (a), clothing put off during working hours;
- (c) wash the hands before partaking of food or leaving the premises.

#### 8. No person shall—

- (a) work in *heading* of yarn dyed by means of a lead compound after *suspension*, without written sanction from the *Surgeon* entered in the Health Register;
- (b) introduce, keep, prepare, or partake of any food or drink, or tobacco, in any room in which *heading* of yarn dyed by means of a lead compound is carried on;
- (c) interfere in any way, without the concurrence of the occupier or manager, with the means and appliances provided for the removal of the dust, and for the carrying out of these Regulations.

*H. J. Gladstone,*

One of His Majesty's Principal  
Secretaries of State.

Home Office, Whitehall,  
6th August, 1907.

**REGULATIONS (GREAT BRITAIN).<sup>(1)</sup>****For the Process of File-cutting by Hand.**

(1903. No. 507.)

Whereas the process of file-cutting by hand has been certified in pursuance of section 79 of the Factory and Workshop Act, 1901, to be dangerous :

I hereby, in pursuance of the powers conferred on me by that Act, make the following Regulations, and direct that they shall apply to all factories and workshops (including tenement factories and tenement workshops) or parts thereof in which the process of file-cutting by hand is carried on : Provided that the Chief Inspector of Factories may by certificate in writing exempt from all or any of these Regulations any factory or workshop in which he is satisfied that the beds used are of such composition as not to entail danger to the health of the persons employed.

1. The number of stocks in any room shall not be more than one stock for every 350 cubic feet of air space in the room ; and in calculating air space for the purpose of this Regulation any space more than 10 feet above the floor of the room shall not be reckoned.

2. After the 1st day of January, 1904, the distance between the stocks measured from the centre of one stock to the centre of the next shall not be less than 2 feet 6 inches, and after the 1st day of January, 1905, the said distance shall not be less than 3 feet.

3. Every room shall have a substantial floor, the whole of which shall be covered with a washable material, save that it shall be optional to leave a space not exceeding 6 inches in width round the base of each stock.

The floor of every room shall be kept in good repair.

4. Efficient inlet and outlet ventilators shall be provided in every room. The inlet ventilators shall be so arranged and placed as not to cause a direct draught of incoming air to fall on the workmen employed at the stocks.

The ventilators shall be kept in good repair and in working order.

5. No person shall interfere with or impede the working of the ventilators.

6. Sufficient and suitable washing conveniences shall be provided and maintained for the use of the file-cutters. The washing conveniences shall be under cover and shall comprise at least one fixed basin for every ten or less stocks. Every basin shall be fitted with a waste pipe discharging over a drain or into

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<sup>(1)</sup> These Regulations were gazetted June 23, 1903.

some receptacle of a capacity at least equal to one gallon for every file-cutter using the basin. Water shall be laid on to every basin either from the main or from a tank of a capacity of not less than  $1\frac{1}{2}$  gallons to every worker supplied from such tank. A supply of clean water shall be kept in the said tank while work is going on, at least sufficient to enable every worker supplied from such tank to wash.

7. The walls and ceiling of every room, except such parts as are painted or varnished or made of glazed brick, shall be limewashed once in every six months ending the 30th of June, and once in every six months ending the 31st of December.

8. The floor and such parts of the walls and ceiling as are not limewashed and the benches shall be cleansed once a week.

9. If the factory or workshop is situated in a dwelling-house the work of file-cutting shall not be carried on in any room which is used as a sleeping place or for cooking or eating meals.

10. Every file-cutter shall when at work wear a long apron reaching from the shoulders and neck to below the knees. The apron shall be kept in a cleanly state.

11. A copy of these Regulations and an Abstract of the provisions of the Factory and Workshop Act, 1901, shall be kept affixed in the factory or workshop in a conspicuous place.

12. It shall be the duty of the occupier to carry out Regulations 1, 2, 3, 4, 6, 7 and 11; except that, in any room in a tenement factory or tenement workshop which is let to more than one occupier, it shall be the duty of the owner to carry out these Regulations, except the last clause of Regulation 6, which shall be carried out by the occupiers.

It shall be the duty of the occupier or occupiers to carry out Regulation 8.

It shall be the duty of the occupier or occupiers and of every workman to observe Regulations 5, 9 and 10. These Regulations shall come into force on the 1st day of September, 1903.

*A. Akers-Douglas,*

One of His Majesty's Principal  
Secretaries of State.

Home Office, Whitehall,  
19th June, 1903.

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**REGULATIONS (GREAT BRITAIN).<sup>(1)</sup>****For Bronzing with Dry Metallic Powders in Letterpress Printing,  
Lithographic Printing, and Coating of Metal Sheets.**

(1912. No. 361.)

In pursuance of Section 79 of the Factory and Workshop Act, 1901, I hereby make the following Regulations and direct that they shall apply to all factories and workshops or part thereof in which is carried on the process (in these Regulations referred to as *bronzing*) of applying dry metallic powders to, or dusting them off from, surfaces previously printed or otherwise prepared, in :—

- Letterpress printing ; or
- Lithographic printing ; or
- Coating of metal sheets.

These Regulations shall come into force on June 1st, 1912.

*Exemptions.*

1. Regulation 2 shall not apply to *bronzing* by hand for the purpose of proof-pulling ;

2. Exemption shall be allowed from Regulation 2 on not more than two days in any week, and on not more than fifty days in any calendar year, subject to the following conditions :—

- (a) Notice in the prescribed form and with the prescribed particulars, shall be affixed in the factory or workshop not less than seven days before use is first made of the exemption, and shall be kept so affixed as long as the exemption is used ; and a copy of such notice shall at the same time be forwarded to the inspector for the district ;
- (b) The prescribed particulars shall be entered in the prescribed register before the commencement of the work on each day on which any use is made of the exemption ; and any day in respect of which such entry is made shall be counted as a day on which this exemption has been used ; and
- (c) At least one day shall intervene between any two days on which this exemption is used.

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(<sup>1</sup>) These Regulations were gazetted April 16th, 1912.



*Definitions.*<sup>(1)</sup>

In these regulations—

“ *Efficient exhaust draught* ” means localised ventilation effected by mechanical means for the removal of dust so as to prevent it as far as practicable from escaping into the air of any occupied room. No draught shall be deemed efficient which fails so to remove smoke generated at the point where dust originates.

*Duties.*

It shall be the duty of the occupier to observe Part I of these Regulations, and the conditions attached to Exemption 2 as above, if used by him.

It shall be the duty of every person employed to observe Part II of these regulations.

## PART I.

*Duties of Occupiers.*

1. *Bronzing* by machine shall not be done except under such conditions as to prevent as far as practicable the escape of dust into the air of any occupied room.

2. Subject to the exemptions hereinbefore mentioned, *bronzing* by hand shall not be done except in connection with :—

(a) an *efficient exhaust draught*, or

(b) an appliance so constructed as to prevent as far as practicable the escape of dust into the air of any occupied room.

3. There shall be provided and maintained in a cleanly state and in good repair, for the use of all persons employed in *bronzing*, a lavatory, under cover, with a sufficient supply of clean towels, renewed daily, and of soap and nail brushes, and with either :—

(a) a trough with a smooth impervious surface, fitted with a waste pipe without plug, and of such length as to allow at least two feet for every five such persons, and having a constant supply of warm water from taps or jets above the trough at intervals of not more than two feet ; or

(b) at least one lavatory basin for every five such persons fitted with a waste pipe and plug or placed in a trough having a waste pipe, and having either a constant supply of hot and cold water or warm water laid on,

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<sup>(1)</sup> The terms “ *bronzing* ” and “ *efficient exhaust draught* ” to which defined meanings are given are printed throughout in italics.

or (if a constant supply of heated water be not reasonably practicable) a constant supply of cold water laid on and a supply of hot water always at hand when required for use by such persons.

4. There shall be provided :—

- (a) suitable overalls for all persons employed in *bronzing*, and head coverings for females employed in *bronzing*, which shall be collected at the end of every day's work, and be washed or renewed at least once every week ;
- (b) for all persons employed in *bronzing*, a suitable place or places for clothing put off during working hours.

## PART II.

### *Duties of Persons Employed.*

5. Every person employed in *bronzing* shall—

- (a) wash the face and hands before partaking of any food or leaving the premises ;
  - (b) wear the overalls provided in pursuance of Regulation 4 (a) ;
  - (c) deposit clothing put off during working hours in the place or places provided in pursuance of Regulation 4 (b) ;
- and every female employed in *bronzing* shall wear the head-coverings provided in pursuance of Regulation 4 (a).

6. No person employed shall—

- (a) introduce, keep, prepare, or partake of any food or drink (other than milk or tea provided by the occupier) in any part of the factory or workshop in which *bronzing* is carried on ;
- (b) make use of tobacco in any part of the factory or workshop in which *bronzing* is being carried on ;
- (c) interfere in any way without the concurrence of the occupier or manager with the means and appliances provided for the removal of dust, and for carrying out these Regulations.

*R. McKenna,*

One of His Majesty's Principal  
Secretaries of State.

Home Office,

Whitehall,

11th April, 1912.

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**REGULATIONS—AUSTRALIA (VICTORIA).****Regulations regarding the Manufacture of White Lead, Red Lead, and Litharge.<sup>(1)</sup>**

Whereas by the Factories and Shops Acts it is amongst other things enacted that the Governor in Council may, if the Minister has certified that any manufacture, plant, process or labour used in factories is dangerous, make such regulations as may be deemed necessary and reasonably practicable to decrease or prevent danger from such manufacture, plant, process or labour. And whereas the Honourable Matthew Baird, His Majesty's Minister of Labour for the State of Victoria, has certified that the manufacture of white lead, red lead, or litharge is dangerous generally; Now therefore His Excellency the Lieutenant-Governor of the State of Victoria, by and with the advice of the Executive Council thereof, under the powers hereinbefore recited as well as under all other powers by the said Acts him enabling in that behalf, doth make the following Regulations regarding employment in the manufacture of white lead, red lead, or litharge (that is to say):—

*The Manufacture of White Lead, Red Lead, or Litharge.**Duties of Employer.*

1. No male under eighteen years and no female of any age shall be employed at any work exposing him or her to the dust of white lead, red lead or litharge.

2. For every employee employed at any work exposing him to the dust of white lead, red lead, or litharge, overalls of an approved pattern and material shall be provided, maintained, and at least once a week thoroughly cleaned.

3. For every employee engaged in packing or handling dry white lead, dry red lead, or litharge or drawing stoves, a respirator of approved pattern and material shall be provided. Every respirator shall be cleaned daily, and, when not in use, shall be kept in a suitable place set apart for the purpose.

4. The floors of the workroom shall be cleaned daily after being thoroughly damped.

5. The dressing room, bath, lavatory, and sanitary conveniences shall be thoroughly cleaned daily.

6. Before each meal, in addition to regular meal times, and before the end of the day's work, at least ten minutes shall be allowed to each worker for washing.

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(<sup>1</sup>) Gazetted 8th September, 1920.

7. An adequate supply of hot and cold water, soap, turpentine or oil, nail brushes, and clean towels shall be provided and maintained in the bathroom.

8. There shall be kept available for the use of employees either :—

- (a) A medicinal compound prescribed by a duly qualified medical practitioner as being suitable for counter-acting the pathological effects of lead absorption or for aiding elimination of lead from the human system, or
- (b) A medicinal compound of the following ingredients :—sulphate of magnesium (Epsom salts), 2 ounces; water, 1 gallon; lemon syrup, sufficient to flavour.

### *Duties of Employees.*

9. No person shall smoke nor chew tobacco nor take snuff while employed in a lead process.

10. No person shall partake of nor prepare food or drink while employed in a lead process.

11. No person shall perform any work involving exposure to lead dust unless he has on an overall suit and head-covering, and no person shall work at drawing stoves, or packing, or handling dry white lead, red lead, or litharge, unless he is also wearing a respirator.

12. No person, on leaving a workroom, shall enter the luncheon room nor partake of food until he has taken off his overalls, head-covering and respirator and placed them in the place provided for the purpose, nor until he has also thoroughly washed face and hands in the lavatory.

*To follow Chapter 1, Clause 6, Class F of the Regulations under the Factories and Shops Acts made on the third day of February, 1920.*

### CLASS G.

Buildings for the manufacture of white lead, red lead, or litharge :—

All floors shall be imperviously paved and laid so as to drain into impervious drains.

Efficient control of dust and fumes shall be provided by exhaust draught, etc.

A luncheon room shall be provided for the use of employees, so constructed and placed as to be free from dust or fumes

generated in the manufacturing process, and having no direct communication with a workroom.

Two dressing-rooms shall be provided. In the first shall be removed and stored all private clothing put off by the workmen during working hours. In the second shall be put on, removed and stored all overalls and other clothing worn only while at work.

Such dressing-rooms shall be so constructed and placed as to be free from any dust or fumes generated in the manufacturing process.

A bathroom with bath and lavatory accommodation shall be provided. The lavatory accommodation may consist of lavatory basins or washing troughs as follows:—

One lavatory basin to every five persons or fraction of five persons employed, or washing troughs of sufficient length to allow two feet at least to every five persons or fraction of five persons employed.

If practicable, the bathroom shall be situated between the dressing-rooms.

A closed cupboard shall be provided wherein to keep respirators when not in use, also apparatus for washing and sterilizing them.

And the Honourable Matthew Baird, His Majesty's Minister of Labour for the State of Victoria, shall give the necessary directions herein accordingly.

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**NEW SOUTH WALES.****Mines Inspection Act, 1901.**

## SECTION 48.

## REGULATIONS FOR THE PREVENTION OF LEAD POISONING.

*Record of cases of lead poisoning.*

1. The manager of every mine shall record the name, age, branch of occupation, and length of time employed of every workman laid off on a medical certificate by lead poisoning; and also of every workman laid off on account of alleged lead poisoning where no medical certificate is produced; and shall transmit a copy of each month's record (distinguishing certified from uncertified cases) to the Chief Inspector of Mines not later than the seventh day of the next following month.

*Supply of drinking water.*

2. The owner of every mine shall provide ample supply of sweet and wholesome drinking water, which shall at all times be freely and easily available to all persons at the mine; it shall be stored in such a manner as to prevent contamination by dust.

Canvas bags or wooden barrels for containing drinking water must be supplied by the owner of every mine, made according to a pattern approved by the Chief Inspector of Mines; such bags shall be so constructed as to be closed at the top by a solid (not canvas) cover; the water shall be drawn from them through a metal or wooden tap (not a canvas pipe) suitably fixed to the bottom of the bag.

The barrels shall be supplied with a metal tap for pouring off the water. Such bags or barrels shall be stored in a cool place, and shall be kept replenished with water in sufficient quantity for the use of all persons employed in or about the mine.

The vessel for drinking purposes shall hang in an enclosed place, and be thoroughly protected from dust.

If preferred, the drinking water may be supplied by pipes to every plat; the supply pipe shall descend to the lowest plat, and shall there enter a closed metal reservoir of at least 100 gallons capacity for cooling purposes; the delivery pipe shall return from the reservoir to the surface, and shall be fitted with a tap at every plat for the supply of water. The source of supply for this system shall be either public water-mains or well protected reservoirs of condensed water at the surface.

No person employed in a mine shall carry any vessel containing tea, water, or other fluid for drinking purposes, unless covered by a tight-fitting lid, which shall not be removed in the mine except when a drink is required.

*Sprinkling-water and water for washing.*

3. On feed floors, tapping floors, and at every other place where dust is raised, stand-pipes and hose or other suitable contrivances shall be provided by the owners, so that dust may be

conveniently laid by sprinkling water; water for sprinkling shall also be furnished in the main drive on all the different levels, so that it can be led to every working and easily distributed to lay dust. Proper provision shall be made in all the levels to enable men to wash their hands. Every person employed in a mine shall wash his hands before meals.

*Bath-water, bathing and changing-room.*

4. At every mine or works where lead, lead ores or lead compounds are mined, dressed, smelted or manufactured, bath-houses and changing-rooms shall be provided by the owners to the satisfaction of the Chief Inspector of Mines.

The baths shall include both shower and plunge tanks.

The changing-rooms shall be separate from the bath-house, although attached to, and in communication with, it, and shall have boarded floors.

Both bath-house and changing-rooms shall be available to the workmen, free of cost, at all reasonable hours, and so that they can be used by every shift.

They shall be sufficiently lighted after dark, and warmed in cold weather.

Both plunge and shower baths shall be supplied with water, warmed to at least 75°F. in cold weather.

A caretaker shall always be in charge of bath-houses and changing-rooms, and it shall be part of his duty to keep a day-book, and to record therein the names of all persons who use the baths.

*Change of clothes.*

5. Every underground workman shall change his ordinary clothes for working clothes in the changing-rooms before descending to his work, and shall change clothes again on finishing work, and before leaving the mine. Surface workmen engaged in smelting, or otherwise handling lead ores, shall also make the same change of clothes.

*Flue dust.*

6. Adequate provision shall be made by the owner of every mine to prevent, as far as practicable, the emission of flue-dust from smelter stacks. If the Inspector considers any alteration or any additional appliances are necessary for that purpose, he may, by written notice, require the owner to make or supply the same, and in such notice a reasonable time shall be named within which such required alterations, or additions are to be made. If any owner object to any requirements of the Inspector in this direction, he may, within the time named in the notice, show cause in writing to the Chief Inspector of Mines, who may confirm, vary, or veto the notice of the Inspector.

*Flue dust—how to be dealt with.*

7. The ports by which flue-dust is removed from champion flues shall not open into tapping floors, but the outlets shall be on the other side of the flues, into a space otherwise unoccupied.

The floors to which the dust falls when first hoed out shall be smooth and impermeable, and shall be provided with a kerb raised above the surrounding surface, so that the deposited dust or mud may not be stepped on and carried about; the floors shall be perfectly clean, except when in actual use.

Workmen employed to cleanse flues, and to gather and transport flue dust, shall be under the same obligation to change clothes before going on shift as underground hands.

And no person shall be so employed unless wearing a suitable respirator, to cover his nose and mouth, or to engage in work, or stand about where others are so employed, unless he put on a respirator.

The flue-dust shall be carefully wetted as soon as it is drawn from the flue. No accumulation of wet flue dust shall be permitted in any mine, unless within a securely-closed receptable; nor shall any accumulation of dry flue dust be permitted outside the flues, but shall forthwith be charged back regularly.

#### *Ventilation of tapping floors.*

8. Tapping floors shall be ventilated at the angle between the top of the champion flue and the feed floor, to reduce draft on the tapping floor, and to afford fumes a way of escape; flues of large diameter may be carried up through the feed floor without interfering with operations there, and they may expand below into oblong funnel-shaped openings.

#### *Repairing furnaces in blast.*

9. No workman shall engage in repairing a furnace in blast (as in replacing a faulty water-jacket panel) unless he wear a respirator, as mentioned in Regulation No. 7.

#### *Fumes from molten metal and slag.*

10. Furnaces shall be surrounded with a hood, which shall expand below, so as to catch fumes from molten metal and slag. Such hood shall terminate on one side in a chimney leading to the air on the open side of the tapping-floor.

#### *Copy of regulations to be supplied to workmen.*

11. A printed copy of these Regulations shall be presented by the Manager to each workman in engaging him.

#### *Enforcement of regulation penalties.*

12. If any person shall, after written notice served on him by an Inspector, refuse or neglect to comply with any such regulation, he shall be liable to a penalty not exceeding £20, and to a further penalty not exceeding £5 for every day during which the offence is continued after receipt of the notice aforesaid; and any Inspector authorised to do so by the Chief Inspector of Mines, or other person authorised by the Minister, may recover such penalties in the manner prescribed by the Act.

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**NEW SOUTH WALES.****Factories and Shops Act, 1912.****SCHEDULE TWO.***Factories in which the Employment of Persons is Restricted.*

1. In a part of a factory in which there is carried on—

(a) the process of silvering of mirrors by the mercurial process; or

(b) the process of making white lead—

a person under eighteen years shall not be employed.

\* \* \* \* \*

5. No person under sixteen years of age shall be employed at or in connection with any manufacturing process or machine where continuous casting from molten lead or any combination thereof is carried on in a printing establishment.

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**TASMANIA.**

**General Rules for Smelting Works only, whether carried on in connection with Mining Operations or not.**

**(Mines and Works Regulations Act, 1915 (Tasmania).)**

1. The owner, agent, or manager of every smelting works shall provide an ample supply of pure drinking water for the use of all persons employed in or about such works, and such supply shall be freely and easily available. All necessary provision shall be made for preventing such water becoming polluted or being rendered unwholesome.

2. No person employed in or about any smelting works shall carry any vessel containing tea, water, or other fluid for drinking purposes unless the vessel is covered by a tight-fitting lid, which shall not be removed in the works, except when a drink is required.

3. On feed floors, tapping floors, and at every other place in any smelting works where dust is raised, stand pipes and hose or other suitable contrivances shall be provided by the owner, agent, or manager of such works, together with an ample supply of water for sprinkling, so that the dust may be conveniently laid. Proper provision shall be made in every smelting works to enable men to wash their hands.

4. At every smelting works where lead ores are smelted sufficient accommodation in the way of bath-houses and changing-rooms shall be provided by the owner, agent, or manager of such works to the satisfaction of an inspector; and such accommodation shall be available to the workmen free of cost at all reasonable hours, and for use by every shift. An adequate supply of clean water shall be provided, warmed to at least 70° F. in cold weather, and be available for such bath-houses. A caretaker shall be in charge of bath-houses and changing-rooms; and it shall be part of his duty to keep a day-book, and to record therein the names of all persons who use the baths. No person shall destroy, damage, deface, or disfigure any bath-house or changing-room, or any appliances therein, or used in connection therewith, nor be guilty of unseemly or indecent conduct. No person shall enter or use any bath-house or changing-room whilst in an intoxicated state.

5. Adequate provision shall be made by the owner, agent, or manager of every smelting works to prevent, as far as practicable, the emission of flue-dust from smelter stacks.

6. Adequate provision shall be made for carefully wetting flue-dust as soon as it is drawn from the flue. Flue-dust shall not be permitted to accumulate so as to be a nuisance to the health of workmen.

7. At all works where lead ores are smelted, furnaces shall be surrounded with a hood, which shall expand below so as to catch fumes from molten metal and slag. Such hoods shall terminate in a chimney, or other means of access to the air.

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**UNION OF SOUTH AFRICA.****Factory Act, 1918.**

Section 20. No boy or girl under the age of 16 years shall be employed :—

- (i) as a typesetter in or about any printing works or in any room where bronzing is being carried on or where type or type metal is being cast or melted :
- (ii) in any room in which there is carried on continuous dry grinding in the metal trade or the dipping of matches in the manufacture of which white or yellow phosphorus is used :
- (iii) in any factory in the actual making or finishing of bricks or tiles (not being ornamental tiles) or in the making or finishing of salt :
- (iv) in any room in which there is carried on the process of melting or annealing glass.

No boy under the age of 18 years, and no female of any age shall be employed in any room in which there is carried on the silvering of mirrors by the mercurial process or the making of white lead or the grinding of paints or articles containing white lead.

Section 24. The Governor-General may, from time to time, by proclamation in the Gazette, declare any handicraft, process, or occupation to be for the purposes of this Act a noxious handicraft, process, or occupation or, by like proclamation, may declare any occupation to be a dangerous occupation.

A copy of every such proclamation shall be laid upon the Tables of both Houses of Parliament within 14 days after its publication if Parliament is then in session or, if Parliament is not then in session, within 14 days after the commencement of its next session.

Section 25. Whenever a proclaimed noxious or dangerous handicraft, process or occupation is carried on in a factory, the occupier shall be guilty of an offence if any person employed in the factory takes a meal in a room or place in which the noxious or dangerous handicraft, process or occupation has been carried out, and the person who takes a meal in such a room or place shall likewise be guilty of an offence.

Section 29 (*d*). The factory shall be ventilated in such manner that a sufficient supply of fresh air is provided for the persons employed therein and that, so far as possible, all gases, fumes, dust and other impurities arising in the course of the work carried on in the factory are removed or rendered harmless, and that a wholesome temperature is maintained.

**RHODESIA.****Regulations to be observed in the Working of Blast Furnaces.**

Employés on blast furnaces are hereby notified that the directions given below are to be followed.

These instructions are drawn up for the purpose of protecting the health of the workmen, and every care should be taken to carry them out :—

- (1) See that the appliances for carrying away the fumes are working in a proper manner.
- (2) All floors to be constantly sprinkled with water.
- (3) Wear respirators in the presence of fumes, especially when "cutting out."
- (4) No food shall be eaten while on duty on the furnaces, and no food must be kept where fumes or dust may settle on it, and smeltermen should keep a special suit in which to work, and which should be lodged in the change house when going off shift.
- (5) No smelterman shall leave the furnace, or partake of meals, without previously and carefully cleaning and washing his hands, and he must observe strict cleanliness everywhere, to prevent fumes or dust from coming into contact with food or drink.
- (6) Do not rub tobacco up in the hands, but use it ready cut up.
- (7) On going off shift, make use of the hot bath provided.
- (8) Drink oatmeal water in the quantities provided.
- (9) Take the pills provided—one every two hours. These are harmless, but act as a corrective.

*Ross Macartney,*

General Manager.

Broken Hill.

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**INDIA.****Indian Factories Act, 1911.**

10. After Section 19 of the said Act, the following Sections shall be inserted, namely :—

19B. No woman and no person under the age of eighteen years shall be employed in any factory in any of the operations specified in Part I of Schedule I, or, save in accordance with the regulations contained in Part II of Schedule I, in any operation involving the use of lead compounds.

*Schedule I.*

Schedule<sup>(1)</sup> to be substituted in the Indian Factories Act, 1911.

*The Schedule.*<sup>(2)</sup>**PART I.**

1. Work at a furnace where the reduction or treatment of zinc or lead ores is carried on :

2. The manipulation, treatment or reduction of ashes containing lead, the desilverising of lead, or the melting of scrap lead or zinc :

3. The manufacture of solder or alloys containing more than ten per cent. of lead :

4. The manufacture of any oxide, carbonate, sulphate, chromate, acetate, nitrate or silicate of lead :

5. Mixing or pasting in connection with the manufacture or repair of electric accumulators :

6. The cleaning of work-rooms where any of the processes aforesaid are carried on.

**PART II.**

1. Where dust or fume from a lead compound is produced in the process, provision must be made for drawing the fume or dust away from the persons employed by means of an efficient exhaust draught so contrived as to operate on the dust or fume as nearly as may be at its point of origin :

2. The persons employed must undergo the prescribed medical examination at the prescribed intervals, and the prescribed record must be kept with respect to their health :

3. No food, drink or tobacco shall be brought into, or consumed in, any room in which the process is carried on, and no person shall be allowed to remain in any such room during meal times :

4. Adequate protective clothing in a clean condition shall be provided by the employer and worn by the persons employed :

5. Such suitable cloak-room, mess room and washing accommodation as may be prescribed shall be provided for the use of the persons employed :

6. The rooms in which the persons are employed, and all tools and apparatus used by them, shall be kept in a clean condition.

(1) See Section 31.

(2) See Section 19B.

**BRITISH COLUMBIA.****Factories Act Amendment Act, 1918.***Inspection and Regulation of Factories.*

*Chapter 28.*—1. This Act may be cited as the Factories Act Amendment Act, 1918.

2. Section 23 of Chapter 81 of the Revised Statutes of British Columbia, 1911, being the Factories Act, is hereby amended by adding thereto the following as Sub-section (2) :—

“(2) In printing offices where there are three or more type-setting machines (linotypes, intertypes, monotypes, monolines, and the like), the melting pots of all type-setting, type-casting, and similar machines and apparatus, such as linotype machines, monotype casters, stereotype melting pots, and the like, shall be piped in a proper and efficient manner, so as to effectually carry off the noxious fumes and gases arising during their operation: and all melting pots of stereotyping and type-casting devices shall be properly provided with hoods extending over the melting pots and connected with the aforesaid piping in such manner as to carry off the fumes from the molten metal as well as the burned gas fumes: Provided that exhaust fans, blowers, or other suitable devices shall be installed in composing and other rooms where any of the above machines may be in operation for the purpose of further aiding in the discharge of all deleterious matter therefrom. But, notwithstanding anything herein contained, any system of ventilation may be installed and used that includes mechanical exhaust fans, blowers, or other suitable and efficient devices that in the opinion of the Inspector of Factories are efficient and satisfactory.”

3. The composing and stereotype rooms of any printing and publishing establishment shall not be situated in the basement of any building unless it can be shown to the satisfaction of the Inspector of Factories that the air-spaces are sufficient and the ceiling or roof is of such height that an effective system of ventilation can be installed and operated.

4. This Act shall come into force and operation on the first day of January, 1919. Assented to, April 23, 1918.

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**REGULATIONS (FRANCE).**

**Rules applicable to trades in which the staff is exposed to the danger of lead-poisoning.**

(Decree dated October 1, 1913.)

1. In the following lead-working operations—Metallurgy, silver-lead assaying, manufacture of accumulators, glass works, manufacture of lead enamels, their application, manufacture of pottery, decoration of porcelain or earthenware, chromo-lithographic ceramics, manufacture of alloys, oxides, lead salts and colours—the heads of establishments, directors or managers, shall be compelled, independently of the general regulations prescribed in the Decree of 10th July, 1913, to take special steps for the protection of health, as described in the following Sections.

2. Lead-melting pots shall be installed in a ventilated room, distinct from other workshops.

Hoods or other arrangements shall be installed for the efficient drawing off of fumes :—

(a) Over the tapping-holes of lead and lead dross in lead works ;

(b) In front of furnace doors in works devoted to the manufacture of lead oxide ;

(c) Above lead or lead-alloy smelting pots in other trades described in regulation 1.

3. It shall be the duty of the heads of establishments, directors or managers to take the necessary steps to ensure that all work on oxides and other compounds of lead, which are liable to give off dust, shall be carried out under the following conditions :—

These operations shall be carried out, as far as possible, on materials in a wet state :

Whenever such work cannot be carried out in the vicinity of water or of another liquid, it shall be mechanically carried out in an enclosed and dust-proof apparatus :

In the event of it being impossible to conform to the provisions of one or other of the two preceding paragraphs, the work in question shall be carried out under a strong exhaust fan blast, so arranged that noxious substances shall be intercepted in apparatus suitably arranged for the purpose :

Finally, should neither of the above systems be practicable, mask respirators shall be placed at the disposal of the workers.

4. Oxides or other lead compounds, whether in a dry or wet state, in suspension or in solution, shall never be handled with bare hands. For these operations, the head of the establishment shall be compelled to place at the disposal of his staff, either gloves of waterproof material, such as india-rubber, or suitable tools, and shall see that these are maintained in a proper state of repair and are frequently cleaned.

5. Tables on which these products are handled shall be covered with a waterproof material, which shall be maintained in a perfectly waterproof condition.

The same regulations shall apply to the flooring of workshops, which shall, moreover, slope slightly towards a watertight sump, in which substances containing lead shall be collected.

Workshop floors shall be kept moist.

The work shall be so arranged that there shall be no splashing of liquid. Tables, floor and walls shall be washed at least once a week.

6. Without prejudice to the provisions stipulated in regulation 3, the grinding of lead products, their mixing and use in a powdered state, shall be carried out in special rooms, which shall be very efficiently ventilated.

Should it be impossible to dampen the materials, respiratory hoods shall be placed at the disposal of the workers.

7. The dipping of pottery with the bare hand into solutions containing litharge, red lead, galena, white lead in suspension, shall be prohibited.

8. The bringing into the workshops of any food or drink shall be prohibited.

9. The heads of establishments shall be compelled to place at the disposal of the staff overalls or clothes exclusively reserved for working operations, independently of the gloves and respiratory masks.

They shall be compelled to maintain these articles in a satisfactory condition.

10. In establishments in which the staff is exposed to the danger of lead-poisoning, lavatory cloakrooms shall be provided, separate and distinct from those rooms in which lead dust or fumes are liberated.

Lavatory cloakrooms for the use of workmen exposed to lead dust or fumes shall be provided with a sufficient number of washing basins or taps, with an abundant supply of water, and also of soap, and each worker shall be provided with a towel, which shall be changed at least once a week. Cupboards or lockers, fitted with locks or padlocks, shall also be provided, and so arranged that the ordinary clothes are separated from the working clothes.

11. A warm bath or a shower bath shall be placed, once a week, at the disposal of the staff exposed to lead dust or fumes.

A warm bath or a shower bath shall be placed, every day, at the disposal, after work, of every workman engaged on any of the following occupations :—Emptying or cleaning condensing chambers and flues, repairing furnaces in lead-works, conveying lead from the pits in white-lead works, packing red lead into barrels, or finally, reducing lead enamels to powder, and dry-grinding.



12. Heads of establishments shall be compelled to post up the following, in a prominent position, in the workrooms :—

(1) The text of the present Decree.

(2) A workshop regulation enacting ; that workers shall make use of tools, gloves, respirator-masks, and working clothes, placed gratuitously at their disposal ; that they shall introduce neither food nor drink into the work-shops ; that they shall take the greatest care, before each meal, to cleanse thoroughly mouth, nostrils, and hands ; that, daily, or once a week, they shall take the baths referred to in regulation 11.

13. Heads of establishments, directors or managers shall be compelled to provide medical aid, under conditions defined as below.

14. A medical man, appointed by the head of the establishment, shall undertake examinations, and make out reports, as contemplated in regulations 15 and 16.

The firm shall pay for this medical attendance.

15. No worker may be permitted to undertake any work, as contemplated in regulation 1, unless provided with a certificate, issued by the medical man, to the effect that he shows no symptoms of lead-poisoning, or of any illness which is liable to be dangerously aggravated by lead-poisoning.

16. No worker shall be kept on the same class of work unless the certificate is renewed one month after engagement, and afterwards once a quarter.

In addition to the periodical visits, the head of the establishment shall be compelled to have any workman examined by the medical man if such workman states that he is indisposed by reason of the work on which he is engaged, or expresses the wish to be subjected to a medical examination.

17. A special register, which shall always be kept up to date, and placed at the disposal of the labour inspector, shall contain for each worker :—

(1) The dates and periods of absence on account of any illness whatever ;

(2) The dates of the certificates produced as justification of these absences, the medical notes contained therein, and the name of the medical man by whom they are issued ;

(3) Reports issued by the medical man of the establishment, in virtue of regulations 15 and 16 above.

18. By Order, issued in consultation with the consultative Committee of Arts and Manufactures, the Minister of Labour and Social Welfare may grant to a concern, for a definite period,

exemption from all or part of the provisions of regulation 2 (paragraphs *a, b, c*), of regulation 5 (paragraph 2), of regulation 6 (paragraph 1), in the event of the fact being recognised that the application of these provisions is practically impossible, and that the health and safety of workers are assured under conditions at least equivalent to those stipulated in the present Decree.

19. The minimum time limit, contemplated in regulation 69 of Book II, of the Code of Labour and Social Welfare, for the enforcement of these legal regulations, is fixed as follows :—

At one month for the enforcement of the following regulations of the present Decree : regulation 2, regulation 3, regulation 5 (paragraph 2), regulation 10 (paragraph 1) :

At fifteen days for the enforcement of the regulations of regulation 5 (paragraph 1) ;

At eight days for the enforcement of the regulations contained in regulation 9 (paragraph 1) ;

At four days for the enforcement of the other regulations ; nevertheless, this minimum time limit shall be extended to one month for the enforcement of the regulations contained in regulation 6 (paragraph 1) whenever the carrying out of these regulations shall involve the erection of new installations and not only the use of existing installations ;

The time limits, which apply to the enforcement of requirements already notified to heads of establishments, before the publication of the present Decree, shall be temporarily maintained in so far as these time limits have been previously determined.

20. In virtue of sections 3 and 4 of the Act of 26th November, 1912, the Decree of 23rd April, 1908, and the Decree of 28th December, 1909, shall cease to apply from the date of publication of the present Decree.

21. The Minister of Labour and Social Welfare shall be responsible for the enforcement of the present Decree, etc.

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**REGULATIONS (FRANCE).****Regulations relating to the use of White Lead in Painting Work.**

(Decree dated 1st October, 1913.)

1. In painting work the principals of the works, directors or managers are bound, apart from the general measures prescribed by Decree of 10th July, 1913, to take the special measures of protection and hygiene set out in the following sections.

2. Whenever the use of white lead is not prohibited, in virtue of Sections 78-80 of Book II of the Labour Code, it shall only be used in the form of a paste.

3. No preparations of a white lead basis shall be applied directly by hand in painting work.

4. Dry scraping and pumicing of white lead is prohibited.

5. In scraping and pumicing work and generally in all white lead painting work the heads of industrial concerns shall place at the disposal of their workers overalls to be exclusively used during work.

They shall see that the said garments are kept in good condition and frequently washed.

The articles necessary for cleanliness shall be placed at the disposal of the workers on the workplace itself.

The appliances and tools shall be kept in a perfectly clean condition. They shall be cleansed without dry scraping.

6. The principals of the works, directors or managers shall be bound to post up in the rooms in which workers are taken on and paid the following :—

(1) The text of this Decree :

(2) Workroom regulations, imposing upon the workers the duty of making use of overalls and of the articles necessary for cleanliness which are placed at their disposal in virtue of regulation 4.

7. The minimum periods, as provided for in Section 69 of Book II of the Labour Code, for complying with formal instructions, shall be :—

Eight days for formal instructions in pursuance of the provisions of regulation 4 (paragraph I) of this Decree.

Four days for formal instructions in pursuance of other provisions.

As a temporary measure, the periods applying to the formal instructions to the heads of concerns, previous to the publication of this Decree, shall be adhered to as previously fixed.

8. In pursuance of Sections 3 and 4 of the Act dated 26th November, 1912, the Decree dated 18th July, 1902, and the Decree dated 15th July, 1904, shall cease to be applicable from the date of the publication of this Decree.

9. The Minister of Labour is entrusted with the carrying out of this Decree, which shall be published in the *Journal Officiel* of the French Republic and inserted in the *Bulletin des Lois*.

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## REGULATIONS (FRANCE).

**General Health Regulations.**

(Decree July 10th, 1913.)

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6. Dust, and also noxious, unhealthy or poisonous gases, shall be exhausted from the workshop straight into the open air, as and when produced.

To deal with damp vapours, steam, gas and fine dust, hoods with draw-off chimney or other efficient exhausting arrangement shall be provided.

In regard to dust caused by grinding and threshing apparatus, disintegrators, and all other mechanical appliances, drums connected up to a very strong suction draught shall be fitted round the appliances.

For heavy gases, such as mercury and sulphate of carbon vapours, the ventilation shall be downwards, the tables or working apparatus shall be connected direct up to the fan.

The grinding of irritating or poisonous substances, or other operations, such as the sifting or packing into barrels of such substances, shall be carried out mechanically in enclosed appliances.

The air of workshops shall be renewed in such a manner as to remain always pure enough to ensure the health of the workers.

7. In industries designated by Ministerial Order, after consultation with the Advisory Committee of Arts and Manufactures, vapours, disagreeable or injurious gases and dust shall be condensed or destroyed.

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**REGULATIONS (GERMANY).****Order respecting the Installation and Working of Establishments for the Manufacture of Lead Colours and other Lead Compounds.**

(27th January, 1920.)

In pursuance of Section 120e of the Industrial Code, the Federal Minister of Labour issues the following regulations, approved by the Federal Council, respecting the installation and working of establishments for the manufacture of lead colours and other lead compounds.

1. The following regulations shall apply to all establishments where the manufacture of lead colours or other lead compounds (white lead, chromate of lead, lead sulphate, massicot, litharge, red lead, peroxide of lead, English yellow, Neapolitan yellow, acetate of lead, etc.) or mixtures thereof with other substances, is carried on as either a principal or a subsidiary industry.

The regulations shall not apply to :—

- (a) lead-smelting works, even if the manufacture of the substances specified in paragraph 1 is carried on there;
- (b) works in which only colours containing lead which have already been ground with oil or varnish are mixed with each other or with other substances not containing lead, subjected to further processes of manufacture, or packed;
- (c) the manufacture of colours, substances or mixtures which contain less than 1 per cent. of lead or which contain lead only in the form of sulphide of lead (galena).

Painting, decorating, plastering, coopering and varnishing works, and works in which painting, decorating, plastering, coopering and varnishing are carried on in connection with other industries, shall continue to be regulated in accordance with the provisions of the Notification of the Federal Chancellor, dated 27th June, 1905 (See *post* p. 155).

If the substances specified in paragraph 1 are manufactured, mixed or packed in special departments entirely separate from the rest of the works, the regulations shall apply only to the said departments and to the persons permanently or temporarily employed therein.

2. Rooms in which the substances specified in regulation 1, paragraph 1, are manufactured, manipulated or packed, shall be spacious, high, and so constructed as to be adequately and continuously ventilated.

They shall be provided with level, firm and impervious floors, so that dust can easily be removed by a damp process or by suction. The floor shall be thoroughly cleaned by a damp process or by suction as often as necessary, but in any case at least once a day. Any rails or sunk tracks therein shall be

thoroughly cleaned every day after work is over. In each of the rooms specified in paragraph 1, there shall be installed either an apparatus for removing dust by suction or a water tap with hose attachment. Movable suction apparatus may be used. The dust collected by suction shall be disposed of so as to create no nuisance and so that it cannot be introduced into the workrooms or inhaled by the workers.

Walls shall have a smooth and impervious surface, and shall be lime-washed at least twice a year, or, if they are covered with a washable facing (glazed tiles or bricks, etc.) or with oil paint, shall be washed at least twice a year. Furnaces, apparatus, pipes, transmission gear, stair rails, etc., shall be kept free from dust and other dirt, and shall be thoroughly cleaned in a suitable manner whenever necessary, but in any case not less than once a fortnight.

Handles and helms of shovels, spades, stirring poles and other tools shall be thoroughly cleaned every day after work is over.

3. The entrance of dust, gases and fumes containing lead into the workrooms shall be effectively prevented by means of suitable apparatus. Apparatus used in the manufacture of red lead, white lead, lead sulphate or other lead compounds by evaporation, pulverisation, or the heating of lead or lead compounds, shall be provided with mechanical exhaust ventilation maintaining continuously within the apparatus a pressure below that of the atmosphere. Workrooms which it is not possible to protect completely against the entrance of dust, gases and fumes containing lead, shall be separated from other workrooms in such a way that dust, gases or fumes shall not enter the latter.

In new establishments, or in the case of a substantial alteration of an existing establishment, the rooms in which dry substances containing lead are crushed, ground, sifted and packed, shall in all cases be separated from other workrooms by impervious walls.

In new establishments or in the case of a substantial alteration of an existing establishment, red lead furnaces shall be filled and emptied mechanically. Red-lead furnaces without mechanical appliances for filling and emptying shall not be used after 1st January, 1925, even in old works in which no alteration has taken place.

4. Melting pots for lead shall be covered with exhaust apparatus (hoods) with a good draught, fitting tightly and provided with openings for handling. The exhaust pipe shall discharge into the open air or into a chimney. The lead ashes deposited during the process of melting lead shall not be thrown on to the floor, but shall be collected in a special impervious receptacle.

5. The inner surface of oxidation chambers shall, wherever possible, be constructed of smooth, impervious materials. A water-tap with a hose attachment shall be installed in front of each oxidation chamber.

The chambers shall be thoroughly damped after the completion of the oxidation process by the introduction of steam for not

less than 24 hours. They shall be thoroughly cooled and ventilated before being entered, but in such a way as not to dry the chamber, the frames, or the white lead. Wherever possible, the white lead shall be washed from the laths or bars by means of a powerful stream of water. The white lead deposited on walls, staging, laths or bars shall be as completely as possible removed therefrom. The oxidation chambers shall be adequately lighted so long as work is going on therein.

Supplies of crude white lead shall be kept damp during transference to the grinding room and as long as they remain therein.

The walls of the oxidation chambers and the staging, laths and bars therein, shall be thoroughly damped before the chamber is filled.

The employer shall appoint a foreman or charge hand, thoroughly acquainted with these regulations and other precautionary measures to supervise throughout its duration the work in connection with the emptying of the oxidation chambers. The person appointed to exercise supervision shall be responsible under section 151 of the Industrial Code for the observation of the regulations and for the adoption of the necessary precautions.

6. In the preparation and manipulation of wet colours or substances containing lead, viz., in grinding and wet grinding, hand work shall be replaced by the use of mechanical appliances as far as is necessary to reduce to a minimum the soiling of the workers' hands and clothes and the floor.

The settling vats or vessels shall not be entered for the purposes of emptying if they can be emptied mechanically or from the outside.

7. The inner surface of the drying chambers which are entered for the purposes of filling or emptying shall be as smooth and impervious as possible; the floor shall be level, firm and impervious, so that it can be easily cleaned by suction or by washing. The walls, floors, and frames in the drying chambers shall always be kept clean.

New drying chambers for white lead shall be so constructed that it is not necessary to enter them.

8. In grinding, sifting and packing of dry colours or substances containing lead, the filling and emptying of litharge and red lead stoves, red lead containers, and all other apparatus in connection with which dust containing lead is given off, the entrance of dust into workrooms shall be effectively prevented by means of mechanical exhaust ventilation or other suitable means. The grinding and sifting of dry substances containing lead shall be carried on only in a tightly closed apparatus connected with mechanical exhaust ventilation continually maintaining within the apparatus a pressure less than that of the atmosphere.

The packing of litharge, red lead, and dry white lead in packages of 60 kilogrammes and upwards shall be done only by

means of mechanical appliances provided with efficient exhaust ventilation.

9. White lead shall not be ground in a dry state with oil or varnish, but only in a wet condition (known as paste). Even the use of dry white lead dampened afresh with water shall not be permitted in this connection.

10. Women shall not be employed in the establishments specified in regulation 1, paragraph 1, except in the cleaning of rest rooms, mess rooms, cloakrooms, lavatories and bath rooms, and in washing and repairing working clothes. They shall not enter rooms in which substances containing lead are manufactured, mixed, packed, stored or handled.

Persons under 18 years of age shall not be employed or remain in establishments in which lead colours or other lead compounds are the sole or the principal product. In other establishments they shall not be employed or remain in rooms in which they are liable to come in contact with substances, dust, gases or fumes containing lead.

Paragraphs 1 and 2 shall apply in the case specified in regulation 1, paragraph 4, only to the departments in which the substances containing lead are manufactured, mixed or packed.

11. The employer shall give instructions beforehand to workers who come into contact with substances containing lead, as to the deleterious effects of lead upon health and the precautions necessary in connection therewith, and shall supply them with copies of the Notice issued by the Federal Ministry of Labour.

12. Oxidation chambers shall not be filled or emptied between the hours of 9 p.m. and 5 a.m.

Workers who fill or empty oxidation chambers shall not be employed for more than six hours daily. They shall be allowed a break of at least one hour after each two hour's work.

Workers shall not be employed for more than six hours on any day on which they are engaged in packing dry substances of the nature specified in regulation 1, paragraph 1, or closing casks filled with the said substances, even if they have been engaged in other work during part of the time. They shall be allowed a break of not less than two hours during working hours. This provision shall not apply if the workers are not employed for more than two hours during one shift in packing substances and colours containing lead, or if they are employed in connection with packing machines which are provided with efficient exhaust ventilation.

Workers shall not remain in the workrooms during breaks.

13. The employer shall provide a complete working suit and a cap for each worker who comes into contact with lead or substances containing lead, and suitable footgear for those who are employed in rooms with damp floors, or in the emptying of oxidation chambers, settling vats, or crystallisation vats.

14. The employer shall not allow workers to perform preliminary work and cleaning in connection with which the dust cannot be removed immediately and completely by suction unless



their nose and mouth are covered with a respirator, muslin bandage, damp sponge or other efficient means of protection.

15. The employer shall supply each worker with the working clothes, respirators, etc., specified in Regulations 13 and 14, in sufficient number and suitable quality. He shall see that these articles are used for the purpose for which they are provided and only by those workers to whom they are assigned, and that working clothes are washed and repaired at least once a week at his expense, and respirators, etc., cleaned before each occasion on which they are used, and each article kept in its proper place when not in use.

Working clothes shall be washed before they are repaired. The washing shall be done at the works itself.

16. Workers shall not change their clothes in the workrooms, and no articles of clothing of any kind shall be kept therein.

A lavatory and cloakroom and a separate mealroom shall be provided for the workers. The said rooms shall be kept clean and free from dust and shall be heated in the cold season. Appliances for warming food shall be provided in the messroom or in some other suitable place.

At least one washing convenience for every two workers shall be maintained in the lavatory and cloakroom. Hot and cold water shall be supplied in sufficient quantity. Each worker shall be supplied with a nail brush, a vessel for rinsing his mouth, a sufficient quantity of soap, and a clean towel once a week, free of charge.

At least one clothes cupboard with two divisions shall be provided for each worker to deposit the clothes which he takes off.

In establishments in which white lead, red lead, litharge or lead sulphate are manufactured, two clothes cupboards which can be locked shall be provided for each worker, one of which shall be used for keeping outdoor clothes and the other for keeping working clothes when not in use. Cupboards for working clothes and for outdoor clothes shall be separate, and so arranged that the workers must pass through the lavatory after taking off their working clothes in order to reach the cupboard containing their outdoor clothes.

The employer shall install a bathroom for workers in a suitable part of the works, properly fitted up, kept clean, and heated in the cold season. At least one douche-spray or bath shall be provided for every five workers on the day shift. The higher administrative authority, after consultation with the workers' committee, may authorise exceptions to the provisions of this paragraph if the workers are otherwise ensured opportunities of taking baths, except in the case of works in which white lead, lead sulphate, red lead or litharge is manufactured.

Hot and cold water shall be supplied in sufficient quantity during the whole of the time when baths are being taken.

The employer, in agreement with the workers' committee, shall issue rules respecting baths, requiring workers employed in emptying oxidation chambers, white lead and lead peroxide

settling vats, and acetate of lead crystallisation vats, to take a bath daily, and all other workers to do so at least twice a week.

Each worker shall be supplied for bathing purposes with a clean towel at least once a week, and a sufficient quantity of soap, free of charge.

17. The examination and supervision of the state of health of the workers shall be entrusted to a qualified medical practitioner authorised for the purpose by the higher administrative authority, and notified to the industrial inspector. The authorisation shall not be issued until the medical practitioner has given an undertaking to observe the service instructions issued by the Federal Ministry of Labour. The medical practitioner shall examine every worker before engagement, and at the same time shall inform him of the danger of lead poisoning. Only those workers shall be engaged in respect of whom the medical practitioner declares that there is no predisposition to lead poisoning. The medical practitioner shall inspect every worker employed at least twice a month in establishments in which white lead, lead sulphate, litharge, or red lead is manufactured, and at least once a quarter in all other establishments, shall observe any symptoms of illness in them, and particularly signs of lead poisoning, and shall examine thoroughly those cases which seem to him suspicious.

By order of the medical practitioner, any workers who show symptoms of illness resulting from their occupation, especially signs of lead poisoning, shall be excluded from operations in the course of which they come into contact with lead or substances containing lead, until they have completely recovered, and workers who prove specially susceptible to the effects of their occupation shall be permanently excluded therefrom.

If the employer proposes to dismiss a medical practitioner entrusted with the supervision of the state of health of the workers, he shall notify the higher administrative authority of his intention, giving his reasons.

18. It shall be the duty of the employer to keep a special register in book form of the transference or retention of workers, and their state of health, or to cause the same to be kept by an official of the works. He shall be responsible for the completeness and accuracy of all entries, other than those made by the medical practitioner.

The said register shall contain :—

- (1) The name of the person who keeps the register ;
- (2) The name of the medical practitioner entrusted with the supervision of the health of the workers under regulation 17 ;
- (3) The name in full, age, residence, date of engagement and dismissal of each worker, and the nature of his employment ;
- (4) The result of the original examination ;

- (5) The date and nature of each illness of any worker, with a statement whether, in the opinion of the medical practitioner (regulation 17) the illness is connected with lead or not ;
- (6) The date of his recovery ;
- (7) The dates and results of the inspections and examinations prescribed in regulation 17.

Cards may be used instead of a book, subject to the approval of the higher administrative authority, if they contain all the requisite information and their completeness is guaranteed. The book or collection of cards shall be submitted to the industrial inspector and the medical inspector at any time on demand.

19. No worker shall bring brandy, beer, or any other spirituous liquor on to the premises.

No worker shall bring food into the workrooms. Meals shall be taken either in the meal room (regulation 16) or outside the works.

No worker shall enter the meal room, take a meal or leave the works until he has first removed his working clothes, freed his hair from dust, carefully washed his hands and face, and rinsed out his mouth.

Workers must use the working clothes, respirators, etc., in all circumstances in which they are required to do so.

Workers shall not smoke, take snuff, or chew tobacco during work.

20. The employer, in co-operation with the workers' committee, shall see that the provisions of regulations 6, 10, 12 (last paragraph), 16 and 19, respecting the behaviour of the workers on the works premises, are observed.

Workers who in spite of repeated warnings contravene the regulations, may be dismissed before the expiration of the contracted term and without notice.

21. The higher administrative authority, after consultation with the workers' committee and the industrial inspector concerned, may authorise exceptions (subject to revocation) in special cases, on request :—

- (a) To the provisions of regulation 8, paragraph 2, for works in which white lead, litharge or red lead is manufactured in small quantities ;
- (b) To the provisions of regulation 2, paragraph 2, sentence 4 ; and regulation 8, paragraph 1, sentence 2, for works in which other lead colours are manufactured ;
- (c) To the provisions of regulation 2, paragraph 2, sentence 4 ; regulation 8, paragraph 1, sentence 2, and paragraph 2 ; regulation 9, and regulation 12, paragraph 3, for works in which lead colours are not manufactured, but only ground, mixed with other substances or packed ;

provided that care is taken that the workers are protected by means of suitable appliances against contact with substances or dust containing lead.

22. In any case in which technical improvements in the manufacture of lead colours or lead compounds render it impossible or unnecessary to carry out in their entirety the provisions of regulations 1 to 8, the higher administrative authority, after consulting the workers' committee and the industrial inspector concerned, may authorise exceptions (subject to revocation), provided that the workers are ensured in some other manner protection against danger to life and health not less efficient than that provided in the said sections.

23. If it appears desirable on account of the special circumstances of the work, or in the interest of the workers, the Federal Minister of Labour may authorise further exceptions to particular provisions of these regulations.

24. The power of the competent authorities to make more stringent regulations for the protection of the life and health of workers by way of instructions for individual establishments under Sections 120d and 120f, of the Industrial Code, shall not be affected by the foregoing provisions.

25. A written or printed copy of these regulations and of the Notice shall be affixed in a conspicuous place in each workroom and in the cloakroom and messroom; and in addition, a board on which the times for beginning and ending work, and the breaks allowed to workers, are inscribed, shall be similarly displayed in a conspicuous place in rooms in which white lead, lead sulphate, litharge or red lead is manufactured.

26. Work shall not be begun in new establishments for the manufacture of the substances specified in regulation 1, paragraph 1, until the erection of the said establishments has been notified to the industrial inspector concerned. The said inspector shall, on receipt of the notification, ascertain by personal examination that the installation of the establishment complies with the regulations in force.

27. The foregoing regulations shall come into force on the day on which they are promulgated. The regulations issued in the notification of the Federal Chancellor, dated 26th May, 1903 (R.G.Bl., p. 225), shall simultaneously be repealed.

In cases in which structural alterations or material alterations in the plant are necessary in order to comply with this notification, the high administrative authority, after consultation with the workers' committee and the industrial inspector concerned, may allow a period of not more than three years for the said alterations.

**Notification respecting the Lead Notice.**

(27th January, 1920.)

The Notice to be issued under regulation 11 of the Order respecting the installation and working of establishments for the manufacture of lead colours and other lead compounds, dated 27th January, 1920, shall read as follows :—

**LEAD NOTICE.**

Any person who in the course of his occupation comes into contact with lead or lead compounds (with the exception of galena) or substances containing lead, is exposed to the danger of lead poisoning. This danger is the greater owing to the fact that the poison does not betray its presence to the worker either by smell or by taste (except in the case of acetate of lead) and thus he may take it into his system unawares.

Lead poisoning is usually caused by lead, which is left sticking to the hands or clothes or beard, being taken into the mouth in very small quantities during eating, drinking, smoking, snuff-taking, or chewing tobacco, or inhaled in the form of dust during work.

The lead gradually accumulates in the body, and symptoms of lead poisoning appear sooner or later according to the quantity of the poison absorbed and the resisting power of the worker.

A blue-gray line on the gums ("blue line"), close to the teeth, is a sign that lead has already been absorbed by the body in considerable quantities, and that disease due to lead poisoning is about to declare itself. The presence of a blue line should therefore cause the worker to take more care than before that he absorbs no further quantities of lead in the course of his work: it is at this stage possible that he may escape actual illness. On the other hand, it often happens that within a very short time, but sometimes not for some weeks or even months, lead poisoning specifically declares itself, and this is usually very painful, protracted, and in certain cases dangerous to life.

*Prevention of lead Poisoning.*

Care and cleanliness are the surest protection against lead poisoning. In particular, the following directions should be observed :—

- (1) Hands and working clothes must during work be protected as far as practicable from contamination with lead, lead compounds, or substances containing lead. The nails must always be kept short. Smoking, snuff-taking, and chewing tobacco during work must be discontinued. Cigarettes, tobacco, pipes and other smoking utensils must not be brought into the work-rooms.

(2) Workers must not take food and drink, or leave the workplace, till they have removed their working clothes and thoroughly washed their hands with soap and nail brush. The face, and especially the beard, must also be carefully cleansed if they have been soiled during work.

(3) The prescribed working clothes must be worn for all work in connection with lead.

Respirators, damp sponges or bandages covering mouth and nose must be worn during all work involving the raising of dust, unless the dust is immediately and completely removed by exhaust ventilation, in order to prevent the inhalation of dust containing lead.

(4) The widespread belief that the regular use of certain remedies (iodide of potassium, sulphur tabloids, Glauber salts and other aperients), or milk drinking, is sufficient to prevent lead poisoning, is incorrect. On the other hand, a certain value must be attached to nourishing and fat-forming diet, and to that extent to milk drinking also. The use of alcoholic drinks, especially brandy, facilitates the attack of lead poisoning, and is therefore to be avoided.

(5) Exercise in the open air, gymnastics, baths, etc., increase the resisting power of the body, and should therefore be encouraged as much as possible.

If a worker who comes into contact with lead, lead compounds or substances containing lead, becomes ill, he should immediately, in his own interest and in that of his family, consult a doctor, and at the same time tell him that he has come into contact with lead during his work.

### **Notification respecting Service Instructions for the Medical Examination of Lead Workers.**

(27th January, 1920.)

In pursuance of regulation 17 of the Order respecting the installation and working of establishments for the manufacture of lead colours and other lead compounds, dated 27th January, 1920, the Federal Minister of Labour issues the following service instructions :—

#### **SERVICE INSTRUCTIONS FOR THE MEDICAL EXAMINATION AND SUPERVISION OF THE HEALTH OF WORKERS IN ESTABLISHMENTS FOR THE MANUFACTURE OF LEAD COLOURS AND OTHER LEAD COMPOUNDS.**

##### *I.—Examination prior to Engagement.*

The medical practitioner must examine every worker before he is engaged for work in any of the undertakings specified in regulation 1, paragraph 1 of the Order respecting the installation and working of establishments for the manufacture of lead colours and other lead compounds, dated 27th January, 1920, in order to ascertain whether his health is such as to render

him suitable for employment in the establishment. The medical practitioner must, before the examination, ask the worker in what kind of undertaking he has worked hitherto, whether he has ever suffered from lead poisoning before, and what symptoms then appeared.

Women must not be employed in the undertaking specified, except in cleaning the rest room, meal room, cloakroom, lavatory and bathroom, and in washing and mending working clothes: and male workers under 18 years of age must not be employed in establishments devoted mainly or exclusively to the manufacture of lead colours or other lead compounds (regulation 10 of the Order). The medical examination is consequently unnecessary for these workers.

The medical practitioner must regard as unfit for employment any person who has already suffered severely from lead poisoning (*e.g.*, lead paralysis, serious or repeated attacks of lead colic), or who still shows symptoms of lead poisoning, however slight, or who owing to the nature of his previous employment must certainly have absorbed lead, and in whose case the present medical observations and the blood test—especially the presence of numerous basophil granules in the red cells—indicate that the appearance of lead poisoning in the near future is to be feared. Weakly or ailing persons must also be regarded as unsuitable, especially those suffering from pulmonary tuberculosis, from diseases of the circulatory system or of a syphilitic nature, or from inflammation of the kidneys, and persons addicted to drink.

The medical practitioner must, at the close of the examination, instruct the workers found suitable for employment as to the dangers of lead poisoning. His instruction must be based on the popularly phrased lead notice issued by the Federal Minister of Labour. They must include due reference to the special circumstances of the works, namely, the way in which the worker must behave in order to guard against the absorption of lead, and to the symptoms of commencing lead poisoning.

The medical practitioner must, after the completion of the examination, prepare for the employer a written statement of his opinion as to the suitability of the persons examined for employment in the works.

## *II.—Periodical Examination of the Workers.*

The medical practitioner must inspect persons employed in the works at least twice a month in the establishments in which white lead, lead sulphate, litharge, or red lead is manufactured, and at least once a quarter in all other establishments to which the aforementioned Order applies; he must observe symptoms of illness, and especially those of any illness connected with lead and examine thoroughly those cases which seem to him suspicious (regulation 17 of the Order).

During his inspections the medical practitioner must ascertain by questioning each worker, whether there are any signs of injury to his health through lead work, or whether he is actually already suffering from lead poisoning. He must thoroughly examine persons whose cases appear to him suspicious in this connection, in a special room set apart for the purpose.

In the course of both the inspection and the examination, the following signs of illness especially must be watched for as symptoms of impending or already existing lead poisoning: viz.: The blue line, pallor, lead discoloration (pale, somewhat yellowish skin, bluish grey discoloration of the mucous membranes, pale yellow colour of the sclerotics, wasting, debility, pains in the head, loss of appetite, constipation and other digestive disorders, attacks of colic, diseases of the circulatory system (arteriosclerosis), arthralgia, disorders of the organs of sense, paralysis, albuminuria hæmatoporphyrinuria, kidney disease, increased blood pressure, reduction of the hæmoglobin content of the blood (anæmia), appearance of basophil granular erythrocytes (granular red cells) or other blood changes (polychromatophil erythrocytes, increased number of leucocytes together with numerous transitional and atypical forms), saturnine encephalopathy, cachexia.

The medical practitioner must carry out the special examinations for the verification of the presence of lead poisoning in accordance with the appended directions.

If the examination establishes the presence of forms of lead poisoning which are dangerous to life or which may become so if long continued, especially saturnine encephalopathy, cachexia, chronic inflammation of the kidneys (not merely albuminuria), or recurrent paralysis, the medical practitioner must send to the employer a written proposal for the permanent exclusion from lead work of the person examined. He shall do the same in a case in which, although only slight lead poisoning is present, it has developed very soon after beginning lead work, or has recurred at short intervals and with increasing severity, and so indicates the presence of unusually high susceptibility to lead. Permanent exclusion from lead work must be proposed, moreover, in the case of those workers who are found to be suffering from pulmonary tuberculosis or alcoholism, even if they show no signs of the influence of lead, or are not suffering from lead poisoning.

In all other cases of lead poisoning the medical practitioner must propose in writing to the employer the temporary exclusion from lead work of the persons concerned until the symptoms have disappeared.

If only granular erythrocytes (less than one granular cell in 50 fields of the microscope), are detected on examination—and if other diseases are not present, especially other disorders of the blood supply (such as malaria, pernicious anæmia, leukæmia, cancerous cachexia, nitro-benzol poisoning)—or if a worker is found to have a blue line, lead discoloration, or hæmatoporphyrin in the urine, these symptoms must be regarded as signs of the effects of lead, but the patient should be regarded as not yet suffering from lead poisoning but rather as a “lead carrier” (*Bleiträger*). If it is feared, as a result of the medical observations and the blood test (especially numerous granules in the red cells), that a lead carrier will shortly develop lead poisoning, the medical practitioner must in his case also send to the employer a written proposal for his temporary exclusion from lead work until the symptoms have disappeared, and the condition of the blood has improved.



**REGULATIONS (GERMANY).****Notification relating to the Establishment and Management of Works where the Manufacture of Electric Accumulators from Lead or Lead Compounds is carried on.**

(6th May, 1908.)

In pursuance of section 120e of the Industrial Code, the Federal Council has issued the following regulations respecting the establishment and management of works where the manufacture of electric accumulators from lead or lead compounds is carried on.

1. In works where the manufacture of electric accumulators from lead or lead compounds is carried on, all workrooms where lead or lead compounds are prepared or manipulated shall be at least 3 metres high, and shall be provided with windows which can be opened and which afford effective ventilation.

The rooms where the plates are formed shall be provided with effective arrangements for ventilation.

2. In rooms where lead dust is created or where lead or lead compounds become dispersed, the floor shall be so constructed as to be impermeable to water. The walls and ceilings of such rooms shall be limewashed at least once a year, unless they are covered with a smooth, washable facing, or with oil painting.

Wood, soft asphalt, or linoleum shall not be used as floor covering in such rooms, nor shall the walls thereof be covered with paper.

3. Every melting pot for lead shall be provided with a conical hood, placed above it, and having a good draught into the open air or up a chimney.

4. In rooms where the lead plates (grids or frames) are machined by means of band saws, circular saws, planing machines, etc., suitable apparatus must, as far as possible, be provided to draw off and collect scattered particles of lead and lead dust at the actual spot where they are produced.

5. Apparatus for the production of metallic lead dust shall be so constructed and kept tight as to prevent the escape of the dust, both during the manufacturing process and when the apparatus is being emptied.

6. The sifting, mixing, and dumping of the material used for filling the plates, if it contains lead or lead compounds, the removal of paper or other coverings from the dried plates, and any similar processes in the manipulation of the dry or dried filling material (paste) in the course whereof dust is generated, shall only be carried on where there are suitable arrangements for drawing off the dust, or in apparatus so constructed as to prevent the escape of such dust.

7. Open vessels containing lead or lead compounds shall be placed on a grating, over a stand surrounded by a rim, so arranged

that when the lead dust or lead compounds are taken out of the vessel any scattered substance shall be caught into the stand.

8. The following operations must be carried on each in a special room separated from all other workrooms :—

- (a) The preparation of lead plates, grids, or frames by means of a mechanical process (regulation 4).
- (b) The production of lead dust (regulation 5).
- (c) The manufacture and mixing of the material used for filling the plates in so far as such operations are carried on by mechanical means.

9. The surfaces of the benches whereon the said substance is pasted on or pressed into the plates (grids or frames) must be smooth and grooveless ; such benches must be washed once daily

10. Lead burning effected by means of hydrogen, water-gas, or coal-gas blowpipes shall, so far as the nature of the work permits, only be carried on in special workshops provided with effective arrangements for drawing off such fumes.

This provision shall not apply to the soldering of connections between cells such as cannot be carried on outside the forming (charging) rooms.

11. Lead used in the production of inflammable gas and sulphuric acid used in lead processes must be kept technically pure.

12. The workrooms must be kept as free as possible from pollution by lead or lead compounds.

The floor of the workrooms specified in regulation 2 must be washed once at least every day, and every day after work hours.

13. The employer shall provide a sufficient supply of suitable working clothes and caps for the use of the workmen employed in the manufacture of accumulators.

He shall, by making suitable regulations for the purpose and by careful supervision, ensure that such working clothes shall be used only by the persons to whom they are allotted, and he shall see that they are washed at least once a week and kept, when not in use, in the places provided for the purpose.

14. A lavatory and cloak-room, and a separate mess-room shall be provided for workmen in a part of the premises which is free from dust. Such rooms shall be kept in a cleanly state and free from dust, and shall be heated during the cold season.

A sufficient supply of water and vessels for rinsing the mouth and of suitable nail-brushes, soap and towels for washing the hands, together with sufficient accommodation for keeping garments not worn during work, shall be provided in the said lavatory and cloak-room.

The employer shall give every workman an opportunity of taking a warm bath at least once a week.

15. No woman or young person shall be employed in occupations involving contact with lead or lead compounds.

16. No person shall be engaged for work in the manufacture of accumulators unless he produces a certificate of a medical practitioner appointed by the higher administrative authority for the purpose, certifying that he is in a suitable state of health for such employment. The said certificates shall be collected and preserved, and must be produced on demand of the inspector (section 139B of the Industrial Code).

17. The employment of workmen engaged in mixing and manufacturing the material used for filling accumulators and applying it to the plates (grids or frames) shall be so regulated that the period of employment, either

(a) shall not exceed eight hours daily, with a break of at least one hour and a half, or

(b) shall not exceed six hours daily without a break for meals.

If the period of employment is regulated in the manner prescribed above under (b), the said workmen may be employed on the same day in other work, provided such employment does not bring them into contact with lead or lead compounds, and a break of at least two hours is allowed between the two kinds of employment.

Every employer shall, within one week of the opening of his establishment, give notice to the local police authority of the periods of employment adopted, and may only adopt a different system after having first given notice of his purpose.

The employer shall appoint a qualified medical practitioner, whose name shall be notified to the inspector, to keep watch over the health of his workmen. The said practitioner shall examine the workmen at least once every month for symptoms of lead poisoning.

On the order of the medical practitioner, workmen showing symptoms of disease consequent on absorption of lead shall be removed from their employment either until they are completely cured, or permanently, if they prove to be especially susceptible to the effects of lead.

19. It shall be the duty of the employer to keep account of the transference or retention of the workmen engaged in such processes and the state of their health in a register kept for the purpose, or to cause such register to be kept by an official of the firm. He shall be responsible for all entries made in the said register other than those made by the medical practitioner.

The register shall contain the following particulars :—

- (1) The forename and surname of each workman, his age and residence, the date when he enters and leaves the employment, and the nature of his employment.

- (2) The name of the person who makes the entries.
- (3) The name of the medical practitioner appointed to keep watch over the health of the workmen.
- (4) The date when any workman falls ill and the nature of his illness.
- (5) The date of his recovery.
- (6) The dates and results of the general medical examinations prescribed in regulation 18.

20. The employer shall issue regulations on the following matters which shall be binding on workmen employed in the manufacture of accumulators :

- (1) No workmen shall take any food with him into a work-room or bring or drink on the premises any spirituous liquor. No meals shall be taken in the workrooms.
- (2) The workmen must wear the clothes provided for them.
- (3) No workman shall enter the mess-room, take a meal, or leave the premises until he shall have first removed his working clothes and carefully washed his hands and face and rinsed his mouth.
- (4) No workman shall smoke, take snuff, or chew tobacco during work.

It shall be provided in the said regulations that any workman who, despite repeated warnings, shall continue to contravene the same, may be dismissed before the expiration of the contracted term, and without notice.

In the event of Rules of Employment being drawn up for any establishment (Section 134A of the Industrial Code), the regulations issued in pursuance of this Section shall be included therein.

21. A written or printed copy of regulations 1-21 of these regulations and of the regulations issued by the employer in pursuance of regulation 20, shall be affixed in a conspicuous place in every workroom and also in the cloakroom and mess-room.

22. In case of any contravention of regulations 1-21 of these regulations, the police authority may order the cessation of work in any departments affected, until such time as the prescribed conditions have been established (section 147, paragraph 4, of the Industrial Code).

23. These regulations shall come into operation on July 1st, 1908, in the place of the regulations issued in the Notification of the Imperial Chancellor of 11th May, 1898 (R.G.Bl., p. 176).

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**REGULATIONS (GERMANY).****Order of the Imperial Chancellor relating to the Processes of Painting, Distempering, Whitewashing, Plastering, or Varnishing.**

(27th June, 1905).

*1.—Regulations for carrying on the industries of Painting, Distempering, Whitewashing, Plastering, or Varnishing.*

*Regulation 1.*—In the processes of crushing, blending, mixing, and otherwise preparing white lead, other lead colours, or mixtures thereof with other substances in a dry state, the workers shall not directly handle pigment containing lead, and shall be adequately protected against the dust arising therefrom.

*Regulation 2.*—The process of grinding white lead with oil or varnish shall not be done by hand, but entirely by mechanical means, and in vessels so constructed that even in the process of charging them with white lead no dust shall escape into places where work is carried on.

This provision shall apply to other lead colours. Provided that such lead colours may be ground by hand by male workers over 18 years of age, if not more than one kilogram of red lead and 100 grains of other lead colours are ground by any one worker on one day.

*Regulation 3.*—The processes of rubbing-down and pumice-stoning dry coats of oil-colour or stopping not clearly free from lead shall not be done except after damping.

All *débris* produced by rubbing down and pumice-stoning shall be removed before it becomes dry.

*Regulation 4.*—The employer shall see that every worker who handles lead colours or mixtures thereof is provided with, and wears, during working hours, a painter's overall or other complete suit of working clothes.

*Regulation 5.*—There shall be provided for all workers engaged in processes of painting, distempering, whitewashing, plastering, or varnishing, in which lead colours are used, washing utensils, nail brushes, soap and towels. If such processes are carried on in a new building or in a workshop, provision shall be made for the workers to wash in a place protected from frost, and to store their clothing in a clean place.

*Regulation 6.*—The employer shall inform workers, who handle lead colours or mixtures thereof, of the danger to health to which they are exposed, and shall hand them, at the commencement of employment, a copy of the accompanying leaflet (not printed with this edition), if they are not already provided with it, and also a copy of these regulations.

*II.—Regulations for the Processes of Painting, Distempering, Whitewashing, Plastering, or Varnishing when carried on in connection with another Industry.*

*Regulation 7.*—The provisions of paragraph 6 shall apply to the employment of workers connected with another industry who are constantly or principally employed in the processes of painting, distempering, whitewashing, plastering, or varnishing, and who use, otherwise than occasionally, lead colours or mixtures thereof. The provisions of paragraph 8-11 shall also apply if such employment is carried on in a factory or shipbuilding yard.

*Regulation 8.*—Special accommodation for washing and for dressing shall be provided for the workers, which accommodation shall be kept clean, heated in cold weather, and furnished with conveniences for the storage of clothing.

*Regulation 9.*—The employer shall issue regulations which shall be binding on the workers, and shall contain the following provisions for such workers as handle lead colour and mixtures thereof :—

1. Workers shall not consume spirits in any place where work is carried on.
2. Workers shall not partake of food or drink, or leave the place of employment until they have put off their working clothes and carefully washed their hands.
3. Workers, when engaged in processes specified by the employer, shall wear working clothes.
4. Smoking cigars and cigarettes is prohibited during work.

Furthermore, it shall be set forth in the regulations that workers who, in spite of reiterated warning, contravene the foregoing provisions may be dismissed before the expiration of their contract without notice. If a code of regulations has been issued for the industry (par. 134a of the G.O.) the above indicated provisions shall be incorporated in the said code.

*Regulation 10.*—The employer shall entrust the supervision of the workers' health to a duly qualified medical man approved of by the public authority, and notified to the factory inspector (par. 139b of the G.O.), and the said medical man shall examine the workers once at least in every six months for symptoms indicative of plumbism.

The employer shall not permit any worker who is suffering from plumbism or who, in the opinion of the doctor, is suspected of plumbism, to be employed in any work in which he has to handle lead colours or mixtures thereof, until he has completely recovered.

*Regulation 11.*—The employer shall keep or shall cause to be kept a register in which shall be recorded the state of health of the workers, and also the constitution of and changes in the staff; and he shall be responsible for the entries being complete and accurate, except in so far as they are effected by the medical man.

This register shall contain :—

1. The name of the person keeping the register.
2. The name of the medical man entrusted with the supervision of the workers' health.
3. The Christian name, surname, age, place of residence, the date of commencement and of termination of employment of each worker employed in any process named in par. 1, and also the nature of his employment.
4. Date and nature of the illness of a worker.
5. Date of recovery.
6. Dates and results of the medical man's general examinations prescribed by par. 10.

The register shall be produced when required by the Inspector of Factories (par. 139b of the G.O.) or by the medical inspector.

*Regulation 12.*—The foregoing regulations shall come into force on 1st January 1906.

**REGULATIONS (GERMANY).****Lead Smelting Works.**

(June 16th, 1905).

*General Regulations.*

1. Workrooms in which lead ores are roasted, sintered, or smelted, pig lead produced and submitted to further treatment, distillation of rich lead (bullion cupellation) litharge, red lead, or other oxides of lead prepared, ground or sieved, stored or packed, or zinc skimmings distilled, shall be roomy, high and so arranged that a sufficient constant exchange of air takes place. they shall be provided with a level and solid floor to allow of easy removal of dust by a moist method.

The walls shall be smooth so as to prevent collection of dust ; they shall be either washed down or lime washed at least once a year.

Provided that this shall not apply in the case of calcining sheds with wooden walls.

2. An abundant supply of good drinking water, protected against contamination from dust, shall be provided for the workers on the furnaces and smelting pots, and in such close proximity to them, that they can obtain it at any time without having to go into the open air.

Arrangements for sprinkling the floors shall be provided near the furnaces. The floors of the rooms mentioned in par. 1 shall be wet cleansed at least once daily.

3. Prepared (*i.e.*, concentrated) lead ores and leady smelting products, unless moist, shall not be crushed except in an apparatus so arranged as to prevent as far as possible penetration of dust into the workrooms.

Provided that this shall not apply to calcined material from converters.

Sacks in which lead ores and materials containing lead have been packed, shall not be freed from dust and cleaned except in a dust-proof apparatus or by washing.

4. Materials containing lead for charging the blast-furnaces, if they are oxides and form dust, shall be damped before they are mixed with other materials, stocked on the feeding floor, or charged into blast-furnaces.

Provided that this shall not apply in the case of calcined material from converters.

5. Dust, gases, and lead fumes, escaping from furnaces, and converters, tapping spouts, tapping pots, drain sump, slag pots, slag cars, or slag channels, and from glowing residues taken from the furnaces, shall be caught as near as possible to the point of origin and removed harmlessly.

Dust collecting chambers, flues, as well as furnaces which have been "blown down," shall not be entered by workmen unless sufficiently cooled and ventilated.

*Special Regulations for such parts of a factory where lead colours are prepared.*

6. In grinding, sieving and packing dry leady materials, in charging, and emptying litharge and red-lead furnaces, in collecting the red lead and similar operations in which leady dust is developed, exhaust arrangements shall be provided for preventing the entrance of dust into the workrooms.

7. Apparatus producing leady dust, if their construction and manner of use does not effectually prevent evolution of dust, shall have all cracks protected by thick layers of felt or woollen material, or by similar means, so as to prevent the entrance of dust into the workrooms.

Apparatus of this character shall be provided with arrangements for preventing compression of air in them. They shall only be opened when the dust in them shall have completely settled, and they are absolutely cool.

*Special arrangements in force for the distillation of zinc skimmings.*

8. Proposed new furnaces for the distillation of zinc skimmings (for which according to paragraphs 16 and 25 of the Industrial Code a special permission is required), shall be so arranged that (1) there shall be at least a clear space of 10 feet in front of the charging opening; (2) any passages under the distillation rooms shall be roomy, at least  $11\frac{1}{2}$  feet high in the centre, light and airy.

9. Dust, gases, and fumes arising from the zinc skimmings distillation furnaces shall be collected as near as possible to the point of origin, and carried outside the smelting room.

The entrance of gases from the fires into the smelting room shall be prevented as far as possible by suitable arrangements for drawing them off.

10. Sieving and packing of by-products obtained in the distillation of zinc skimmings (poussière, flue dust) shall not be done except in a special room separated from the other workrooms, and complying with the requirements of regulation 1.

Sieving shall only be done in an apparatus so constructed that dust shall not escape.

*Employment of workers.*

11. Women and young persons shall not be employed or permitted in rooms mentioned in regulation 1, in flue-dust chambers, or dust flues, or in the removal of flue dust.

12. No person shall be newly employed in rooms mentioned in regulation 1, in flue-dust chambers, or dust flues, or in the transport of flue dust, without a certificate of fitness from the surgeon appointed by the higher authorities.

These certificates shall be collected and shown to the Factory Inspector and Appointed Surgeon on request.



13. No person shall be employed in charging blast furnaces, apart from mere labouring work on the floors, for more than eight hours daily. The same shall apply in the case of workmen employed in the inside of furnaces when cool, or in emptying flue-dust chambers, or dust flues which contain wet flue dust.

No person shall be employed in cleaning out, from inside, flue-dust chambers, or dust flues containing dry flue dust for more than four hours daily; and including emptying and work of transport of this kind altogether no longer than eight hours daily.

Other workers in rooms specified in regulation 1 shall not work more than 10 hours in 24, exclusive of mealtimes.

Exception to this is allowed in the case of those workers who are employed for the purpose of a weekly change of shift, and for whom exception as to Sunday employment is permitted by Imperial Decree.

*Clothing, overalls, lavatory accommodation, &c.*

14. The occupier shall provide for all persons employed in cleaning out flue-dust chambers, dust flues, repairing of cooled furnaces, grinding, sieving and packing of litharge, red lead, or other lead colours, complete suits of working clothes, including caps and respirators.

15. Work with lead salts in solution shall not be done except by workers who either grease their hands or are provided with impermeable gloves.

16. The suits of clothes, or overalls, provided in regulations 14 and 15, respirators and gloves, shall be provided in sufficient amount and in proper condition. The occupier shall see that they are always suitable for their purpose, and are not worn except by those workers for whom they are intended: and that they, at stated intervals (the overalls at least once a week, the respirators and gloves prior to use), are cleaned, and during the time that they are not in use are kept in a place specially reserved for each article.

17. A lavatory and cloak-room shall be provided for the use of the workmen in a part of the building free from dust. Separate from it there shall be a dining room. These rooms must be kept free from dust and be warmed during the winter.

In a suitable place provision shall be made for warming the workers' food.

Water, soap and towels, and arrangements for keeping separate the overalls from other clothing taken off before the commencement of work shall be provided in sufficient amount in the lavatory and cloak-room.

The occupier shall afford opportunity for persons engaged in cleaning out flue-dust chambers, dust flues, and the cooled furnaces, to take a bath daily after the end of the work, and for those handling oxides of lead, at least once a week, during

working hours inside the works. The bathroom shall be warmed during the winter.

18. The occupier shall place the supervision of the health of the workers in the hands of a surgeon, appointed by the higher authorities for this purpose, whose name shall be sent to the Inspector of Factories. The surgeon shall examine the workers at least once a month in the factory, with a view to the detection of symptoms of lead poisoning.

The occupier shall not employ persons suspected by the surgeon of having contracted lead poisoning in the processes mentioned in regulation 1 or in cleaning out flue-dust chambers, dust flues, or furnaces when cold, or transport of the flue dust, until they are quite well. Those who appear peculiarly susceptible shall be permanently suspended from working in these processes.

19. The Health Register shall be shown to the Factory Inspector and the Appointed Surgeon on demand. (Similar to regulation 13 of Spelter Regulations, *post p.* 165.)

20. The occupier shall require the workers to subscribe to the following conditions :—

- (1) Food must not be taken into the workrooms. Meals may only be taken outside the workrooms.
- (2) Workmen must only enter the meal room to take their meals or leave the factory, after they have taken off their overalls and carefully washed their face and hands.
- (3) Workmen must use the overalls, respirators and gloves in those workrooms and for the particular processes for which they are given them.
- (4) Cigar and cigarette smoking during work is forbidden.
- (5) A bath in the factory must be taken every day at the close of their work by those engaged in the emptying and cleaning of flue-dust chambers, flues, and furnaces when cold, and by those employed on oxides of lead once a week.

Provided that this shall not apply in the case of workmen exempted by the appointed surgeon.

Workers contravening these orders will be liable to dismissal without further notice.

21. In every workroom, as well as in the cloak-room and meal room, there shall be posted up by the occupier, in a conspicuous place and in clear characters, a notice of these regulations.

The occupier is responsible for seeing that the requirement of regulation 20 (1) is obeyed. He shall make a manager or foreman responsible for the precise carrying out of regulation 20 (1), (2) and (5). The person thus made responsible shall see to the carrying out of the regulations and for the exercise of necessary care as prescribed in paragraph 151 of the Factory Act.

22. No work in a lead-smelting works shall be commenced until notice of its erection has been sent to the Factory Inspector. After receipt of the notice he shall personally visit to see whether the arrangements are in accordance with these regulations.

23. These regulations come into force on 1st January, 1906.

Where structural alterations are necessary for the carrying out of regulations 1, 5 (1), 6, 9, 10 and 17, the higher authorities may allow an extension of time to a date not later than January 1st, 1908.

If it seems necessary on strong grounds of public interest, the Council (Bundesrath) may extend the time in particular works until 1st January, 1913, and until then allow exceptions from the regulations as regards regulation 13 (1) and (2).

*Graf von Posadowsky.*

## REGULATIONS (GERMANY).

### Notice to File-cutters.

*(Compiled by the Imperial Board of Health and incorporated in the Ministerial Decree of the 11th April, 1907.)*

The use of lead or lead compounds for "beds" has repeatedly caused cases of lead-poisoning in file-cutting establishments. Even those made nominally of tin contain a very considerable proportion of lead, and are therefore also dangerous to health.

File-cutters are in the greater danger of contracting lead-poisoning the higher the proportion of lead in the bed which they use.

Lead-poisoning is usually caused amongst them by metallic lead (however small the quantity may be) being taken into the mouth owing to the hands being dirty when eating or drinking or in smoking, taking snuff, or chewing tobacco.

The effects of this absorption of lead do not show themselves immediately; they more commonly appear after the lapse of weeks, months, or even years, when the particles of lead absorbed into the body have accumulated to such an extent that they are capable of producing symptoms of poisoning.

What are the *signs of lead-poisoning*? The first signs are commonly a blue-gray line on the gums, called the "Blue line," and anæmia, manifesting itself in a paleness of the face and lips. Subsequent symptoms of the disease are very varied. Most frequently lead colic occurs: the person affected feels violent, convulsive pains (colic pains) in the abdomen, emanating from the region of the navel; the abdomen is contracted and hard; with this there is frequently sickness and constipation, seldom diarrhœa. In other cases paralysis asserts itself, which generally affects those muscles which are used in extending the fingers, and occurs mostly in both arms; in exceptional cases other

muscles in the arms, or muscles in the legs or larynx are also attacked. Sometimes lead-poisoning declares itself by violent pains in the joints; the knee-joints are mostly attacked, more seldom joints in the upper extremities. In especially severe cases symptoms of brain disease appear (violent pains in the head, general convulsions, complete unconsciousness, or great restlessness, blindness). Finally, lead-poisoning may result in the severe kidney disease known as contracted kidney and in gout. Miscarriages and still-births are frequent amongst women suffering from lead-poisoning. As a result of lead-poisoning, children born alive are subject to an increased mortality risk in their earliest years. Children nursed by women suffering from lead-poisoning are poisoned by the milk taken into their systems.

Except in those severe cases accompanied by brain symptoms, which not infrequently end fatally, lead-poisoning can usually be cured if the persons affected are able to avoid exposure to further injurious effects from the lead. The cure takes several weeks, or, in severe cases, even months.

The surest *protection against lead-poisoning* is afforded by cleanliness and temperance. Persons who, without being exactly drunkards, are in the habit of taking alcoholic drink in large quantities are more exposed to the danger of lead-poisoning than the more temperate. Brandy should not be taken, especially during working hours. As regards cleanliness, file-cutters using lead beds should be especially careful, and to this end should, above all, observe the following rules :

- (1) Since it is impossible altogether to avoid contaminating the hands with metallic lead, smoking and tobacco-chewing and the taking of snuff should be discontinued during working hours.
  - (2) Workpeople should not take food and drink, or leave the workplace, before they have thoroughly washed their hands with soap and, if possible, with pumice stone or marble soap. If, in exceptional circumstances, drink must be taken during work, the rims of the drinking vessel should not be touched with the hands.
  - (3) If a file-cutter working on a lead bed is taken ill, in spite of these precautions, with symptoms which arouse suspicions of lead-poisoning (see above), he should immediately, in his own interest and that of his family, consult a doctor, and tell him at the same time that he has had to work on beds containing lead.
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**GERMANY.****Regulations relating to the Installation and Working of the Zinc-smelting and Zinc-ore Works.**

(13th December, 1912.)

In pursuance of section 120*c* of the Industrial Code, the Federal Council has issued the following regulations respecting the installation and working of zinc-smelting works and zinc-ore roasting works :—

1. The rooms in which zinc ore is crushed, calcined, or roasted or in which metallic zinc is obtained by distillation must be roomy, lofty, and so arranged as to be adequately and continually ventilated.

They must be provided with a level and firm floor so that the dust can be easily removed by suction or by a wet process.

In order to avoid accumulations of dust, the walls must have a smooth surface. If they are not covered with a washable coating or painted in oil, they must be newly lime-washed at least once a year.

The roof beams and covers of the distilling furnaces must be thoroughly cleansed of dust at least once a year by suction or by some other suitable method.

2. In the rooms designated in regulation 1 there must be a sufficient supply of good drinking water, protected from the penetration of dust, near the workplaces and always available for the workers, in such a way that they can procure it conveniently at any time without going out into the open air.

There must be arrangements for sprinkling the floor near the furnaces and in the trenches.

The floors of rooms designated in regulation 1 must be cleaned at least once a day by suction or by a wet process.

3. The crushing of zinc ore shall only be carried on in apparatus so constructed that the escape of dust is effectively prevented.

4. The roasting and calcining furnaces shall be provided with efficient exhaust apparatus for the purpose of drawing off the escaping gases. Care shall be taken to see that the effective action of the exhaust apparatus is not interrupted while the furnaces are in use.

5. In order to avoid the generation of dust, ores intended for charging the distilling furnaces shall only be stored in front of the furnace, mixed with other materials, and put into the furnace, in a damp condition.

6. Dust, gases, and fumes given off from the distilling furnaces shall be collected by efficient arrangements as near as possible to the point of escape, and drawn off from the smelting room.

Suitable arrangements must also be made to draw off the furnace gases, and prevent them, as far as possible, from penetrating to the smelting room.

7. The waste ashes (*Räumasche*) must not be drawn off in the smelting room; they must be collected in closed conduits or receptacles under the furnace, and transferred direct from these into trucks below the distilling rooms.

The higher administrative authority may allow exceptions to this rule, subject to revocation and not extending beyond 31st December, 1922, in so far as arrangements of the kind indicated in paragraph 1 can only be adopted with structural changes involving a disproportionate expense.

8. Sifting and packing the by-products obtained in the course of zinc distillation (zinc dust and zinc fumes) shall only be carried on in a special room, separated from the other work-rooms and satisfying the requirements of regulation 1.

Sifting shall only be carried on in apparatus so arranged that the escape of dust is effectively prevented.

9. Women and young persons shall not be employed :—

- (1) In charging the zinc-smelting furnaces;
- (2) In emptying the carboys and receivers;
- (3) In emptying the conduits and fume chambers connected with distilling, calcining and roasting furnaces;
- (4) In sifting and packing and in conveying the by-products obtained in the process of zinc distillation;
- (5) In sifting dry waste ashes and dry ashes out of the furnaces;
- (6) In loading and removing residues and ashes out of the furnaces;
- (7) In other processes necessitating their admission to the distilling rooms and particularly in bringing the materials for charging the furnaces.

The rule contained under (7) shall not apply to the employment of male young persons in masonry work, in building new furnaces, or repairing cold furnaces. Notwithstanding, they shall only be employed in rooms in which no distilling furnaces are in use.

10. Workers between 16 and 18 years of age shall not be employed in loading and removing waste ashes, or the ashes out of the furnaces, or in sifting and packing the by-products obtained in the process of zinc distillation.

They may only be employed in other processes connected with distilling operations should the certificate issued by a qualified medical man, authorised for the purpose by the higher administrative authority, show that no objections can be raised to such employment on account of their health or physical development. The certificates shall be collected and preserved and presented to the industrial inspectors and to the medical officers on demand.

11. A lavatory, bath-room, and cloak-room must be provided for the workers in a part of the premises which is free from dust, and also a separate mess room. These rooms must be as near as possible to the work-places. They must be kept clean and free from dust and heated in the cold season.

In the cloak-rooms, sufficient arrangements for keeping working and outdoor clothes must be provided, so constructed that there

is no risk of the outdoor clothes becoming soiled ; a sufficient supply of water, soap, and towels shall be placed at the disposal of the workers without charge.

The workers must be given the opportunity of taking a warm bath at least twice a week. Opportunity for so doing shall be given during working hours, unless, in the opinion of the industrial inspector, this appears impracticable for important considerations relating to the work.

12. The examination and supervision of the state of health of the workers shall be entrusted to a qualified medical man authorised for the purpose by the higher administrative authority, and notified to the industrial inspector ; the said medical man shall examine every workman before engagement. Only those workers shall be engaged in respect of whom he declares that the work is not open to objection. In addition, the medical man shall visit the workers at least once a month at the works, observe any symptoms of illness in them, and particularly any signs of lead-poisoning, and thoroughly examine those cases which seem to him suspicious. By order of the medical man, any workmen who show symptoms of illness resulting from the occupation, especially signs of lead-poisoning, shall be excluded from the operations named in regulation 9, paragraph 1, until they have completely recovered, and workmen who prove specially susceptible to the effects of the occupation shall be permanently excluded therefrom.

13. The employer shall keep a register recording the changes in, and present position as regards, the workers and the state of their health, or he shall cause the same to be kept by a works official. The employer shall be responsible for the completeness and correctness of the entries, except in so far as they are made by the medical man.

This register must contain :—

- (1) The name of the person who keeps the register ;
- (2) The name of the medical man entrusted with the supervision of the health of the workers ;
- (3) The name in full, age, and residence of each worker, the dates when he enters and leaves the employment, and the nature of his employment ;
- (4) The result of the original examination ;
- (5) The date and nature of the illness of any worker, together with a statement whether, in the opinion of the medical man, the illness is traceable to lead or not ;
- (6) The date of his recovery ;
- (7) The dates and results of the inspections and examinations prescribed in regulation 12.

With the approval of the higher administrative authority, cards may be used instead of a book, if they contain all the necessary statements and their completeness is guaranteed.

The book or collection of cards must be submitted to the industrial inspector and the medical inspector at any time on demand.

The workers shall not take any articles of food into the work-rooms. They shall only be permitted to take meals outside the

workrooms. The workers shall not enter the mess-room, take their meals, or leave the premises before they have carefully washed their hands and faces.

The employer shall see that these rules are observed.

15. New distillation furnaces to be constructed, for which a special sanction is required in pursuance of Sections 16 *et seq.* and 25 of the Industrial Code, must be so arranged that—

- (1) there is a free space of at least six metres in front of the opening for charging, or in the case of furnaces the openings of which are opposite each other, at least 10 metres between them;
- (2) the ways (trenches) between the distillation rooms must be roomy, at least 3·5 metres high at the vertex, light and airy.

16. In the event of mechanical changes in zinc smelting works, making it impossible to completely carry out the provisions of regulations 1-8 and 15, the higher administrative authority may allow exceptions, subject to revocation, if it can be proved that the workers are protected against dangers to life and health in some other way, at least to as great an extent as is provided in the said provisions.

17. The power of the competent authorities to issue, by means of instructions, further requirements for the protection of the life and health of the workers in particular premises, in pursuance of regulations 120*d* and 120*f* of the Industrial Code, shall not be affected by the preceding provisions.

18. In every workroom and also in the cloak-rooms and mess-room a written or printed copy of this notification shall be affixed in a conspicuous place.

19. The preceding provisions shall come into force on 1st January, 1913, in place of the Notifications of 6th February, 1900 (R.G.Bl., p. 32) and of 25th November, 1910 (R.G.Bl., p. 1105).

The higher administrative authority may grant exceptions, subject to revocation, for women employed before the 1st January, 1913, in the operations designated in regulation 9, paragraph 1 (2), (3), (5), or (7), to continue to be so employed in those processes, until 1st January, 1920, provided that this employment only takes place before the beginning or after the conclusion of the so-called operations (Manöver) at the furnaces.

Until 1st January, 1920, the higher administrative authority may allow exceptions, subject to revocation, to the limitation prescribed in regulation 9, paragraph 2, sentence 2.

Exceptions granted in pursuance of earlier provisions shall cease to apply on 31st December, 1913.

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**REGULATIONS (GERMANY).****Proclamation by the Chancellor regarding the organisation and working of book printing works and type-foundries.**

(1897, Amended 1907, 1908.)

By the authority of Section 120*c* of Trade Regulations, the Federal Council has issued the following instructions regarding the organisation and working of book printing works and type-foundries :—

I. The following instructions apply to rooms in which persons are employed in setting type or in the manufacture of type or stereotype plates :—

- (1) The floor of the workrooms may not be more than half a metre below the surrounding ground. The Board of Control may permit exceptions if health requirements are met by effective insulation of the floor and adequate supply of light and air.

Rooms beneath the roof may only be used as workrooms if the roof is provided with gutters and plastered timbering.

- (2) In workrooms in which the manufacture of type and stereotype plates is carried on the number of persons employed therein must be so arranged that at least 15 cubic metres of air space are allotted to each person. In rooms in which persons are employed in other work only, at least 12 cubic metres of air space must be allotted to each person.

In cases of temporary and exceptional necessity the Board of Control may, at the request of the contractor (person engaged in the business undertaking), permit a more crowded arrangement in the workrooms for 30 days in the year at most, so that at least 10 cubic metres of air space are allotted to each person.

- (3) The rooms must, in the cases in which at least 15 cubic metres of air space are allotted to each person, be at least 2·60 m., in other cases at least 3 m., high.

The rooms must be provided with windows, sufficient in number and size to ensure adequate lighting of every working place. The windows must be so arranged that they can be opened sufficiently for purposes of ventilation.

Working rooms with steeply sloping roofs may not have an average height less than that specified in Class 1.

- (4) The rooms must be provided with a dense and firm floor which allows of easy removal of dust by means of water. Wooden floors must be planed smooth and be protected against the penetration of damp.

The walls and ceilings, if not provided with a smooth, washable covering or oil colour wash, must be freshly white-washed at least once a year. The covering and oil colour must be washed with water once a year, and the oil colouring, if varnished, must be renewed at least every ten years, if unvarnished every five years.

The compositors' desks and the frames for the type cases must either be placed round about directly on the floor so that no dust can collect underneath, or must be provided with stands high enough to allow of the floor being easily cleaned under the desks and type frames.

- (5) The workrooms must be thoroughly ventilated at least once a day. Care must further be taken that a sufficient change of air takes place in them during working hours.

- (6) The melting pots for the type and stereotype metal must be covered with hoods with a good draught discharging into the open air or into a chimney for vapours which may arise.

The alloying of the metal and the melting of the so-called dross may only be carried on in special workrooms and in other rooms after the workers not engaged in these processes have been sent out of the way.

- (7) The rooms and their installations, but especially walls, mouldings, shelves, must be thoroughly cleaned twice a year. Dust must be removed from the floor at least once daily by washing or rubbing with water.

For wooden or linoleum-covered floors the daily washing or rubbing with water may be left in cases where they are washed over with a non-drying mineral oil and swept daily. The oil coating must be renewed after eight weeks at longest on wooden floors and two weeks at longest on linoleum floors.

- (8) The type cases must be cleaned according to requirement before they are used and as long as they remain in use, but at least twice a year.

The cleaning of the type cases (by bellows) may only be done with bellows in the open air, and may not be entrusted to youthful workers.

- (9) Spittoons filled with water, which must be cleaned daily, are to be placed in the workrooms, at least one for every five persons.

Spitting on the floor is to be forbidden by the employer.

- (10) Adequate washing appliances are to be placed in the workrooms or in their immediate neighbourhood in suitable rooms for the compositors and also for the moulders, burnishers and polishers, and soap must be provided; for every worker a clean hand towel must be provided at least weekly.

If there is not a sufficient quantity of washing appliances with running water, washing convenience must be installed for every five workers at most. Care must also be taken that clean water is always available near by in sufficient quantities and that the used water can be poured away on the spot.

The employer must strictly insist on the workmen making use of the washing convenience supplied before they partake of food in the works or leave the works.

- (11) Clothing which is removed during working hours must be kept outside the workrooms. It is only permitted to keep clothing inside the workrooms if it is kept in cupboards made to close or provided with a closely covering curtain to protect them against penetration of dust. These cupboards must be closed during working hours.
- (12) All lighting apparatus attended by a marked increase in heat must be so arranged or provided with such protective arrangements that an oppressive radiation of heat towards the work places is avoided.
- (13) The employer must, in order to control and guarantee the carrying out of the Regulations under No. 8, Class 2, No. 10, Classes 3 and 11, issue binding instructions for the workers.

If in a works at least 20 workers are employed on an average, these Regulations are to be included in the working Regulations to be issued according to Section 134a of Trade Regulations.

II. In every workroom a notice is to be hung up signed by the local police authorities in confirmation of the correctness of its contents, from which can be seen—

- (a) the length, breadth and height of the room;
- (b) the cubic metre content of air space;
- (c) the number of workers who may according to (b) be employed in the workroom.

Further, in every workroom a placard must be hung in a conspicuous place reproducing in clear characters the directions under I.

III. Departure from the Regulations under I, No. 3, Class 1, 3, may, at the request of the contractor, be permitted by the Board of Control for such works in which, on an average, not more than five workers are employed, as long as the workrooms now used for the industry were in the possession of the present contractor or a relative of his on 31st July, 1897.

IV. The preceding directions become valid immediately (as from now on) for works to be newly erected.

For works which at the time of publication of these Regulations are already in operation, the directions under I, No. 5, Sentence 1, and Nos. 7-9, become valid at once, the other directions after the lapse of one year from the date of publication

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**BELGIUM.****Order relating to the Manufacture of White Lead and other Lead Compounds.**

(5th November, 1910.)

1. The manufacture of white lead, lead oxides (massicot litharge minimum) and of lead chromates shall be subject to the general conditions and respectively to the special conditions provided by the present regulations.

**PART I.—MEASURES IMPOSED UPON MASTERS AND MANAGERS OF WORKS.**

2. *General Conditions.*—(1) All operations shall be effected in roomy, well-ventilated places, which shall be directly and sufficiently illuminated by daylight.

(2) The floors shall be impervious and smooth, and shall be kept in good condition. For each floor stiff supports shall be provided to avoid possible vibrations caused by the working processes.

(3) Every day, after ceasing work, the workshop floors, apparatus and utensils shall be thoroughly cleaned with a hose. At the end of each week, the walls, timberwork, etc., and, generally, all places where the lead-containing dusts are likely to settle, shall be washed.

All dry-cleaning is strictly forbidden.

(4) In the course of all handling of lead compounds the necessary measures shall be taken to avoid contact of the hands with these products, the production of dust and the dissemination of these materials.

(5) The handles of tools and all objects which are necessarily used by the workmen shall be kept in a perfect state of cleanliness.

(6) The thorough collection of dust in a chamber of sufficient dimensions shall be ensured before the air drawn in by the fans is allowed to escape into the open air.

(7) Before entering the workshop, workmen shall be required to put on a working suit protecting them from plumbiferous dust and splashes. This suit shall preferably be a long narrow blouse fitting closely round the neck and body. This suit shall be washed at least once every week.

(8) A special room separated from the workshops shall serve the purpose of a cloak-room. Each workman shall have at his disposal two pegs, one for his ordinary clothes, the other for his working clothes.

(9) In the same room or in a communicating room lavatory basins shall be provided with fresh running water. The workmen shall be supplied with soap, nail brushes, clayey sand and clean towels.

The installation shall at least include (a) a numbered towel and drinking glass per workman, as well as a lavatory basin for every two workmen; (b) a shower-bath provided with all necessary requirements per five workmen.

(10) Before each meal, either in or outside the works, the workmen shall discard their working clothes, properly wash the hands, face and neck, rinse the mouth, and remove all dust from the hair. They shall further take a tepid shower-bath every evening before leaving the works.

(11) A special room, provided with tables and seats, as well as an apparatus for warming food, shall serve as a dining room.

(12) All sanitary arrangements mentioned above shall be kept very clean, in good condition, well ventilated, and heated in winter to a temperature of at least 18 degrees C.

(13) Workmen shall not be allowed to deposit food, or to drink and eat in the works, except in the dining rooms.

(14) Manufacturers shall cause all workmen engaged in the manufacture of lead compounds to be examined monthly by a medical man approved of by the Minister of Industry and Labour.

The charges for the monthly examination, scheduled by Ministerial Order, shall be paid by the manufacturers.

All workmen affected with chronic lead poisoning, and those who show returning symptoms of acute poisoning shall be definitely kept away from work which would render them liable to poisoning.

All workmen whose general state of health shall be found bad at the time of examination shall be kept temporarily away.

Manufacturers shall keep a special register in accordance with the specimen supplied by the Administration, and in which the appointed doctor shall record the statements made in the course of his monthly examinations. This register shall be shown to the officials appointed by the Authorities, whenever requested.

(15) Manufacturers shall not employ workmen addicted to drink; they shall forbid the introduction and consumption of spirituous liquors in the factories or yards.

3. Special Regulations: *A.—Relating to the Manufacture of White Lead:*

(1) Melting of lead shall take place in a special room, under a hood erected in such a manner as to protect the founder against all fumes.

During the running of the lead, the hood shall have an opening only sufficient for this operation. Except during the re-casting of grids, fins, scrap, etc., it should be possible to close it completely, or to lower it to the mouth of the mould. A machine fan shall ensure complete and permanent exhaustion of fumes from beneath the hood during the whole of the time of melting.

(2) The necessary measures shall be taken for the removal of grids, fins and rubbish without producing dust. If necessary, these grids, fins, or each layer of rubbish shall be sufficiently damped.

- (3) Picking, cleaning and sifting by hand is prohibited.
- (4) In the course of all handling of white lead, the necessary precautions shall be taken to prevent any contact of the hand with this material, as well as all splashing of this material.
- (5) Mechanical cleaning and crushing machines which are not submerged in water, shall be enclosed in metal casings which close perfectly and are connected up to suction pipes of high vacuum and arranged so as to prevent the plumbiferous dust from scattering about.  
This apparatus shall only be opened after the dust has completely settled; this shall, if necessary, be ensured by a jet of steam or atomised water.
- (6) From the scraping of the grids till the final grinding under water, the white lead shall be conveyed from one apparatus to another by means of mechanical arrangements.
- (7) Workmen shall not be allowed to enter the drying ovens for the purpose of withdrawing the dry white lead before these have been sufficiently ventilated and shall have cooled down.
- (8) The grinding of the cakes of white lead shall be mechanically effected, and the crushing, grinding, and sieving apparatus shall be erected in such a way as to allow the white lead to pass automatically from one apparatus to the other. This apparatus, erected in a special room, shall be provided with metal casings, kept in good condition, so that the smallest amount of white lead may not escape. They shall be provided with mechanical suction fans, and shall not be opened before the complete settlement of the pulverised material.
- (9) The barrelling of dry white lead shall be mechanically effected by means of arrangements, so that no escape whatever of dust may take place.
- (10) White lead powder shall be conveyed to the loading hopper of the oil-crushing machine by means of an arrangement thoroughly preventing any production of dust. The hopper shall be covered with a casing, which in turn shall be connected up to a suction pipe. During the whole time of working, the air in the casing shall be drawn off by means of a high vacuum suction fan.
- (11) The mixing of the dry white lead with oil, as well as the first transport of the same, shall be effected in hermetically-closed apparatus. From this apparatus the white lead in paste shall be automatically conveyed to the different crushing cylinders.

*B.—Relating to the Manufacture of Lead Oxides: Massicot, Litharge, Minium:—*

- (1) The ovens shall be erected either in the open air or in spacious and well-ventilated positions.

- (2) The necessary precautions shall be taken so that during the operations of mixing and withdrawing from the ovens the workmen shall not be exposed to vapours and dust. Should the ovens not be erected in the open air, suction hoods of high vacuum shall be arranged above the doors.
- (3) When diluting with water, crushing, and withdrawing the massicot from the storage vessels, all contact of the lead oxide with the hands shall be avoided, and the necessary precautions shall be taken to prevent splashing.
- (4) The pulverisation and sieving shall be effected in hermetically-closed apparatus, which shall not be opened until a sufficiently prolonged rest has enabled the dust to settle completely.
- (5) Decanting, barrelling, and heaping-up operations shall be done with all necessary precautions so as to avoid completely the dissemination of dust.

*C.—Concerning the Manufacture of Lead Chromate and Colours contained therein.*

- (1) In all operations by wet process, the necessary measures shall be taken so that workmen shall be able to avoid touching the material with the hands, and shall be protected from splashes.
  - (2) Pulverisation, screening, heaping-up, and packing shall be done under such conditions as to prevent any escape whatever of dust. Such operations shall be carried on either under suction hoods of high vacuum or in hermetically-closed apparatus which shall only be opened after a rest sufficiently long to allow the dust to settle completely.
4. Independently of the regulations drawn up as above, the special object of which shall be the prevention of lead poisoning, white-lead manufacturers shall be compelled to adopt the measures indicated below, in order that their business shall not be objectionable to others.

- (1) The rubbish heaps and dustbins shall not be situated close to dwellings of third parties.

The necessary precautions shall be taken to prevent contamination of water in neighbouring wells by liquids containing organic substances from the rubbish heaps.

- (2) No water containing plumbiferous compounds in suspension or solution shall be allowed to soak into the ground or to be discharged outside the building, except into public sewers.
- (3) All combustible matter shall be removed from the drying rooms.

PART II.—REGULATIONS IMPOSED UPON WORKMEN.

5. Workmen employed in white lead or lead oxide factories, as well as those working in factories manufacturing lead chromate



and colours containing this product, shall be compelled to conform strictly to the following Regulations :—

- (1) Workmen shall maintain in a perfect state of cleanliness all tool handles and all other articles which they have to handle.
- (2) Before entering the works, workmen shall put on a working suit protecting them from plumbiferous dust and splashes. This suit shall preferably be a long narrow blouse fitting closely round the neck and body. This suit shall be washed at least once a week.
- (3) Workmen shall only be allowed to keep their clothes in the cloakroom.
- (4) Before each meal taken either on or off the premises, workmen shall take off their working clothes, properly wash the hands, face and neck, rinse the mouth and remove all dust from the hair. They shall, further, take a tepid shower-bath every evening before leaving the works.
- (5) Workmen shall deposit no food, neither shall they eat or drink, in any part of the premises except the dining-room.
- (6) No workman shall introduce and consume spirits in the works.
- (7) Workmen shall be compelled to submit to the medical examinations provided by regulation 2 (14) of the present Order.

### PART III.—GENERAL REGULATIONS.

6. Manufacturers shall be compelled to post up the regulations of the present Order in a prominent position in their workshops.

7. Labour inspectors and labour inspectors' deputies shall be responsible to see that the present Order is enforced.

They shall report infringements in reports, which shall be considered reliable unless proved to the contrary.

A copy of the report shall be handed to the offender within forty-eight hours, in default of which it shall be nullified.

8. *Penalties.*—In compliance with the Act dated 5th May, 1888, infringements of the present Order shall be punished by a fine of 26 to 100 francs, without prejudice, if necessary, to the application of the penalties provided by sections 269 to 274 of the Penal Code.

In case of a second offence within twelve months following the sentence incurred by virtue of the Act mentioned above, the minimum fine shall be 100 francs and the maximum 1,000 francs.

9. Book 1 of the Penal Code, without excepting Chapter VII. and section 85, shall be applicable to the infringements mentioned above.

10. The present Order shall replace, from 1st January, 1911, the Royal Orders dated 31st December, 1894 and 18th November, 1902, referring to the manufacture of white lead and other lead compounds.

**LAWS AND REGULATIONS (BELGIUM).****Use of White Lead in Painting.**

(20th August, 1909.)

1. The sale, transport and use of white lead are forbidden in the form of powder, small pieces, or lumps, when intended for paint work (*travaux de peinture*).

The sale, transport and use of white lead in the form of powder, small pieces, or lumps intended for other purposes are only permitted under such conditions and such limitations as are fixed by royal decree.

2. White lead intended for paint work shall not be sold, carried, or used except in the form of a paste combined with oil.

3. The partial or total prohibition of the sale, transport, and use of other products, when lead is the basis, in the form of powder, small pieces, or lumps, and intended for paint work, can be determined by ministerial decree, after hearing the superior council of public hygiene.

4. Dry rubbing and dry pumicing of surfaces covered with white lead are forbidden.

5. Infringement of the present law and decrees relative to the execution thereof will be punished by a fine of 26-100 francs.

6. In case of repetition of the offence within 12 months after the preceding conviction, the minimum fine shall be raised to 100 francs and the maximum to 1,000 francs.

7. Chapter VII. and Article 85 of the first book of the Penal Code shall apply to these infringements.

8. Inspectors of Factories shall have power to prove infringements by prosecution (*faisant foi jusqu'à preuve du contraire*).

A copy of the prosecution report shall be sent within 48 hours to the defendant, otherwise the prosecution falls to the ground.

9. The present law shall come into force a year after the date of the publication.

Given at Laeken,  
20 August, 1909.

T.M.L.

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**REGULATIONS (BELGIUM).****Use of White Lead in Painting.**

(25th July, 1910.)

*Article 1.*—In all undertakings of painting in building, the use of white lead as well as the scraping and pumice-stoning of surfaces painted or coated with white lead are subject to the following regulations.

*Regulations for Employers and Contractors.*

*Article 2.*—Employers or contractors may only use white lead in the form of paste, ground and mixed with oil.

*Article 3.*—White lead prepared in this form shall be worked in such a way as to avoid the contact of the substance with the hands and also to avoid splashing. Employers or contractors shall put at the disposal of the workmen the utensils necessary for this purpose.

*Article 4.*—Employers, contractors or their deputies shall see that the material and tools generally are kept clean.

*Article 5.*—The work of dry scraping and dry pumice-stoning surfaces painted or coated with white lead is prohibited.

*Article 6.*—Employers, contractors or their deputies shall see that the workmen engaged in the operations mentioned in Article 1 of the present decree wear clothing and headgear exclusively reserved for the work.

The clothing that the workmen take off before working shall be kept protected from poisonous dust.

*Article 7.*—Employers or contractors shall place at the disposal of their workmen, both in the workplaces and in the workshops, water and the necessary articles and material for rinsing the mouth, washing with soap the face and hands, and for drying. Employers, contractors or their deputies shall see that their workmen perform these operations before taking food or drink and before leaving the workshops or the workplaces.

Food brought into the workshops or carried to the workplaces shall be enclosed in boxes or coverings kept well shut until meal times.

*Article 8.*—Employers or contractors shall cause workmen employed in the operations mentioned in Article 1 of this decree to be examined quarterly by a doctor approved by the Ministry of Industry and Labour.

The expenses of these examinations in accordance with a scale to be prescribed by a Ministerial decree shall be borne by the employers and contractors.

Employers and contractors shall absolutely exclude from all operations which would expose to poisoning workmen attacked by chronic lead poisoning and those who show repeated symptoms of acute poisoning.

They shall exclude temporarily those whose general state of health is bad at the time of the examination.

They shall keep a special register conforming to a model set by the Administration, in which the approved doctor shall enter

notes of the observations made by him in the examination. This register shall be delivered to the proper officials upon demand.

Employers or contractors shall not employ workmen given to drunkenness: they shall prohibit the introduction and consumption of spirits in the workshops and workplaces.

#### *Regulations for Workmen.*

*Article 9.*—Workmen engaged in the handling of white lead, ground and mixed in paste, shall work in such a way as to avoid the contact of the substance with the hands, as also the producing of splashes.

*Article 10.*—Workmen are forbidden to dry scrape or dry pumice-stone surfaces painted or coated with white lead.

*Article 11.*—Workmen engaged upon the operations mentioned in Article 1 of the present decree shall wear clothing and headgear exclusively reserved for the work. They shall keep them in a good state of cleanliness and shall take them off before leaving the workshops or workplaces.

Workmen shall keep the clothing that they take off for working protected from poisonous dust.

*Article 12.*—Before taking food or drink and before leaving the workshops or workplaces, workmen shall rinse their mouths and also wash their hands and faces with soap.

Food brought into the workshops or carried to the workplaces shall be enclosed in boxes or coverings kept well shut until the meal time.

*Article 13.*—Workmen shall keep the material and the tools under their charge in a good state of cleanliness.

*Article 14.*—Workmen are forbidden to bring spirits into or consume spirits in the workshops or workplaces.

*Article 15.*—Workmen are to submit themselves to the medical examinations prescribed in Article 8 of this decree.

#### *General Provisions.*

*Article 16.*—Breaches of the prescriptions of this decree shall be punished by a fine of 100 francs.

*Article 17.*—In case of a repeated offence within 12 months after a conviction under this decree, the minimum fine shall be 100 francs and the maximum 1,000 francs.

*Article 18.*—Chapter VII and Article 85 of the First Book of the Penal Code shall apply to the offences specified above.

*Article 19.*—The Inspector of work and those delegated to the inspection of work have the duty of seeing to the execution of this decree.

Offences shall be stated by their reports, which shall be *prima facie* proof.

A copy of the report shall be sent to the offender within 48 hours.

*Article 20.*—This decree shall replace that of 13th May, 1905, as from 2nd September, 1910.

*Article 21.*—The Minister of Industry and Labour is charged with the execution of this decree.

**REGULATIONS (AUSTRIA).****Use of Lead Paints, etc.**

(15th April, 1908.)

**I.—*Special Regulations for Industrial Workshops and Workplaces.***

*Regulation 1.*—In industrial workshops, places intended for the processes of painting, distempering and varnishing, in which white lead or compounds containing lead are used, shall, as far as new premises are concerned, comply with the requirements of the Ministerial Order of the 23rd November, 1905, R.G.B. No. 176. As far as existing premises are concerned, these shall be equally spacious and capable of being well ventilated and heated. In every case the walls and floors of the before-mentioned workplaces, if closed, shall have a jointless impervious surface. These workplaces shall be kept clean, and the cleaning shall always be done by wet methods after work has ceased.

*Regulation 2.*—On premises referred to in regulation 1, where more than 20 workers are employed in the processes of distempering, painting, and varnishing, the contractors shall place at the disposal of such workers special places capable of being warmed for washing and dressing, furnished with conveniences for the storage of clothing, and meal rooms, and shall arrange for these places to be always kept clean.

**II.—*Special Regulations for Processes.***

*Regulation 3.*—In the industries of painting, distempering, and varnishing, and in all industries in which the processes of painting, distempering, and varnishing are carried on, colours and putties containing lead shall be stored and used exclusively in vessels and receptacles on which the fact that the contents contain lead is indicated in a clear and intelligible way.

*Regulation 4.*—No white lead or other colours and putties containing lead shall be used for internal painting when carried on for the purposes of trade.

For the purposes of this regulation "internal painting" means such painting as is not continuously exposed, or specially designed to withstand exposure, to the direct influence of the weather.

Provided that this regulation shall not apply to the process of laying on a first "priming" coat over old lead paint, when pure white paint is being renewed; or to the process of laying on paint which is frequently exposed to the influence of aqueous or other vapours.

The industrial authorities, when establishing the precautionary measures elsewhere stated, may grant an exemption permitting the use of the substances named in paragraph 1 of the regulation for internal painting in the case of work which would otherwise not be carried out in this country.

*Regulation 5.*—No women or young assistants shall be employed in the processes of painting, distempering, and varnishing where the use of white lead or lead compounds is permitted, or conditionally permitted, in pursuance of regulation 4.

Young assistants shall not be employed in the process of cleaning the places named in regulation 1, or the overalls named in regulation 8. Overalls shall always be cleaned by a wet method. Provided that apprentices over 14 years of age may be employed, for not more than six weeks, in connection with the processes mentioned in the first paragraph of this regulation in so far as is necessary for the completion of their education as apprentices.

*Regulation 6.*—No assistant known to the employer to have suffered from lead poisoning shall be re-employed in processes in which white lead or lead compounds are used, or in cleaning the workplaces indicated in regulation 1, or the overalls indicated in regulation 8, without a medical certificate stating that he has recovered and is fit for such employment.

*Regulation 7.*—White lead or lead compounds shall not be pounded or ground or mixed with oil or varnish by hand, but entirely by mechanical means. In the above operations, and in the processes of pouring such material into receptacles or from one receptacle to another, the workers shall be completely protected against the generation of dust, and the escape of dust into workplaces shall be prevented. Provided that each worker may, when necessary, mix by hand in any week 3 kilogrammes (about 7 lbs.) of red lead, and not more than half a kilogramme (about 1 lb.) of any other lead colours except white lead.

No dry lead paint or putty shall be rubbed down or pumice-stoned unless it has been previously moistened. All *débris* produced in the process of rubbing down shall be removed while still moist.

When the processes mentioned in regulation 4, paragraphs 3 and 4, are carried on in buildings and not in the open air, they shall be carried on in places set apart for that purpose in which a notice shall be affixed clearly stating that white lead or other lead compounds are used therein.

*Regulation 8.*—The contractor shall see that all persons who use white lead or other lead compounds shall wear overalls and head coverings, which shall be cleansed as required. A contractor who in his business employs more than 20 workers shall supply the overalls and head coverings necessary for the workers in question, and shall provide for the regular cleansing of these overalls and head coverings.

The contractor shall also provide for all persons who use white lead or other lead compounds a sufficient supply of water (for drinking and for washing purposes), washing utensils, brushes, soap, and towels, which shall be maintained in suitable condition. He shall also provide respirators for all persons who use white lead or other lead compounds in processes entailing the generation of much dust.

*Regulation 9.*—No white lead or other lead compounds shall be stored, nor shall any process in which these materials are manipulated be carried on, in the living rooms or bedrooms set apart for apprentices.

*Regulation 10.*—All persons using white lead and other lead compounds shall wear the overalls and head coverings provided and prescribed, and shall wear respirators when engaged in processes entailing the generation of much dust. They shall also thoroughly wash their faces, mouths, and hands before meal times and at the termination of employment. No such worker shall partake of spirits or tobacco (cigars, cigarettes, pipe tobacco, chewing tobacco, or snuff) in the workplaces.

Food and drink shall not be kept in the workrooms, and shall only be consumed during the prescribed meal times outside these workrooms, and only in the special meal rooms where such are provided.

### III.—*Regulations respecting Special Inspection.*

*Regulation 11.*—Wherever white lead or other lead compounds are used a copy of this Order shall be affixed in an easily accessible place and maintained in a legible condition.

Every person brought in contact with white lead or lead compounds shall, at the commencement of his employment, be furnished with a copy of the leaflet printed as a supplement to these regulations, and the name of all such workers shall be entered in a special register.

The employer shall, on the first appearance of lead poisoning, provide that any such worker is at once notified to the surgeon of the Invalidity Bureau.

Where more than 20 workers are employed, the employer shall provide that all workers brought in contact with white lead or other lead compounds shall be examined by a surgeon for signs of possible lead poisoning once at least in every three months, and the date of each visit of the examining surgeon and the result thereof shall be entered in the register prescribed in regulation 2. These registers shall be produced to the Government inspectors on demand.

### IV.—*Penalties.*

*Regulation 12.*—Infringements of this Order which are not punishable under the general penal code, or as infringements of the Factory Act, shall, in accordance with the Ministerial Order of 30th September, 1857, R.G.B. No. 198, be referred to the Penal Department.

### V.—*Commencement of Order.*

*Regulation 13.*—This Order shall come into force on the 1st April, 1909.

#### LEAFLET.

1. Every kind of work in which lead or lead compounds are used may cause lead poisoning.

2. Lead poisoning is caused when lead colours are introduced into the mouth, even in small quantities, by eating and drinking

with dirty hands, beard and clothing, or by smoking, taking snuff, or chewing tobacco; when they are breathed in the form of dust; or when they gain access to the body in any manner.

3. The effects of lead poisoning may not show themselves until the particles of lead have sufficiently accumulated in the body to cause symptoms of poisoning. Early signs of lead poisoning are a bluish-grey line on the gums, the blue line, and a peculiar pallor of face, especially in the lips. Among other symptoms of the disease the following require special note:—Painful spasms in the abdomen, originating in the region of the navel (so-called lead colic), frequently accompanied by vomiting and by constipation or, less frequently, diarrhœa; pains in the joints and paralysis, headache, general cramps, unconsciousness, grave derangement of the system, even blindness and severe brain symptoms, which not infrequently prove fatal.

4. With prompt and suitable medical treatment, lead poisoning is usually curable, if the patient can avoid further exposure to lead.

5. Lead poisoning can be guarded against by taking the following precautions:—

- (a) Thorough cleanliness must be observed both in and out of working hours; and in particular any generation of dust in the course of work must be avoided.
- (b) When at work overalls and head coverings must be worn, and changed at least once a week. Outdoor clothing must, during working hours, be kept free from dirt and dust.
- (c) Workers who use lead paint should take nutritious and, as far as possible, fatty food, and abstain from spirits.
- (d) The use in workplaces of spirits, and of every form of tobacco (cigars, cigarettes, pipes, chewing tobacco, and snuff) must be absolutely avoided.
- (e) Food and drink, brought or sent to workplaces, must be so kept as to be perfectly protected from dust and dirt. They should only be consumed at the prescribed meal times, and in the special meal rooms where such are provided.
- (f) before every meal time and before the close of work, the hands and face, especially the beard and mouth, must be thoroughly washed with warm water; the mouth must also be rinsed out before drinking.
- (g) Washing, wherever possible, must not be carried out in the workplaces.
- (h) Pipes, tobacco, and eatables should not be kept in the overalls.
- (i) Every worker should take a bath at least once a week, when the hair of the head and beard must be carefully cleansed.
- (k) Every worker must, on the least sign of illness, consult the doctor, and at the time call his attention to the fact that he has had to work with lead products.



**AUSTRIA.****Order relating to Lead and Zinc-smelting Works.**

(22nd July, 1908.)

In pursuance of section 220 of the General Mining Act and of section 1 of the Act of April 30th, 1870, R.G.B1. No. 68, the Minister of Public Works, in agreement with the Minister of the Interior, issues the following regulations for lead and zinc-smelting works established in accordance with the General Mining Act :—

1. In designing new works for lead and zinc smelting the direction of the prevailing wind shall be taken into account, so that the gases and vapours emanating from the furnaces shall not be conducted to other workplaces, dwelling houses and similar buildings in the neighbourhood of the works.

The chimneys shall, as far as is practicable, be erected outside the works, and shall be of such a height that gases and vapours drawn off through them shall be carried away in as harmless a manner as possible.

So far as this appears to be necessary, in view of special circumstances, such as the locality where the works are established and the nature of the gases and the vapours arising in the course of the smelting operations, condensing apparatus shall be instituted in accordance with any instructions issued by the mining authorities, through which the gases and vapours arising in the smelting of the ores shall be made to pass before escaping into the open air.

As far as is practicable, arrangements shall be made whereby operations may be suspended in certain parts of the works or in connection with certain appliances for the purpose of carrying on cleaning and repairing work, independently of the rest of the works.

2. The rooms where lead ore or zinc ore containing lead is roasted or zinc ore calcined, or where lead ore is slabbed or smelted, lead refined or desilverised, litharge or other lead oxides produced in the smelting processes are ground, mixed, stored or packed, rough zinc or zinc refuse distilled and zinc dust worked off, must be roomy, high, well lit, and so arranged that they shall be adequately and constantly ventilated. If sufficient light cannot enter from the sides of such rooms they shall be provided with skylights.

In rooms where lead oxides are manipulated the openings for admitting light must be at least 4 metres high.

In order to prevent an accumulation of dust there shall, as far as possible, be no sills or recesses in the workrooms.

3. The floors of the rooms specified in regulation 2 shall be level and firm, and must be constructed with concrete, iron plates, tiles or similar material from which dust may be easily removed by a wet process.

In order to prevent the accumulation of dust the surface of the walls in the said rooms must be smooth and they shall be cleaned by a wet process once a year.

In rooms where dust containing lead oxide is liable to be engendered to a great extent, the walls must be covered with smooth cement or the masonry lime-washed or painted in oil. In other rooms, if the walls are of masonry, they must be covered with whitewash, renewed at least once a year.

The floor must always be kept in a damp condition, and must be cleaned at least once a day. This provision shall also apply to rooms where charging or other processes in the course of which dust containing lead is produced are carried on.

4. All apparatus used in lead and zinc-smelting works shall, as far as possible, be so placed that they shall be approachable from all sides, so that it may be possible for every workman to carry on his work in a comfortable position. Reverberatory, distilling and refining furnaces and plant for Pattinson's and Parkes' process, etc., must be so arranged that the workmen shall not, in the course of their work, be subjected to heat radiating from several sides.

The joints of apparatus wherein dust containing lead or gases and vapours containing lead are generated must, unless the escape of dust or gases and vapours, as the case may be, is prevented by their method of construction and use, be so contrived that dust, gases and vapours are prevented from escaping into the workrooms as far as is practicable.

5. A sufficient supply of good, fresh and, where possible, running drinking water to which dust cannot penetrate, shall be kept in readiness about the workrooms for workmen employed in the rooms specified in regulation 2, in such a manner that they shall be able to obtain it conveniently at any time without going out of doors. Drinking water brought in vessels shall only be provided in cases where it is not possible to lay on water in the works in question at all, or not without disproportionate expense. In such cases only closed vessels shall be used for drinking water. Such vessels shall be thoroughly cleaned every day and scalded out with hot water or steam at least once a week. If drinking water is brought in vessels provision must be made for renewing it several times during each shift.

6. Hydrants fitted with hoses and sprays, or some other suitable arrangements for cooling the heated material, damping the dust, etc., must be provided in the rooms specified in regulation 2. and also in all rooms where work is carried on in the course of which dust is generated, unless the mining authorities shall sanction exceptions in any particular case.

7. Unless the materials to be ground are damped to such an extent as to prevent the generation of dust, lead and zinc ores and other smelting products containing lead, shall only be ground in apparatus such that the dust is prevented from escaping into the workrooms by means of exhaust draughts.

Sacks in which lead or zinc ore or other materials containing lead are packed shall not be dusted or cleaned, except in apparatus which are impervious to dust or by washing.

8. If the materials containing lead with which the furnaces, retorts and muffles are loaded are oxidised and liable to give rise to lead dust, they must, so far as is consistent with further operations, be damped for the purpose of preventing the generation of dust, before being mixed with other materials and being put and smelted in the aforesaid apparatus.

9. Dust, gases and vapours containing lead which escapes from furnaces, retorts, converters, distilling apparatus, tapping apparatus, slag crucibles, cinder tubs, refining and Pattinson melting-pots, the red-hot refuse, etc., must by means of suitable arrangements, be caught up as near as possible to the place where they emerge, and be removed from the workroom in a harmless manner.

If workmen are obliged to enter condensing chambers, dust conduits, and burnt-out furnaces, such places must first be sufficiently cooled and ventilated.

10. Where litharge and other substances containing lead, such as zinc dust, are ground and packed, and where any other occupations are carried on in the course of which dust containing lead is generated, exhaust draughts and drawing-off apparatus and other suitable apparatus must be provided to prevent the entry of dust into the workroom.

The grinding and packing of the said substances shall be carried on in separate rooms, and shall, as far as possible, not be done by hand.

11. For the purpose of investigating the contents of the air in various parts of the works specimens thereof shall, on the special order of the mining authority, be taken and analysed by suitable persons for the purpose of ascertaining the amount of lead it contains either in special cases or at stated intervals according to the instructions of the said authority.

A current record shall be kept of the said analyses which shall be laid before the mining authority or its representative, on demand.

12. No woman of any age or workman under the age of 18 years shall be employed in the rooms specified in regulation 2, or in the preparation of test bottoms, or the charging or emptying of furnaces, nor in the condensing chambers and conduits, nor in cleaning and breaking-up furnaces, in transporting the condensed dust, in repairing furnaces, nor in any other work in the course of which lead dust is generated.

13. Workmen employed at reverberatory and slag furnaces, converters, Pattinson and refining melting-pots, distilling apparatus and refining hearths, in clearing out condensing chambers and conduits containing humid condensed dust, in transporting lead dust and in preparing the test bottoms where the substances containing oxide of lead are used, shall work in 8-hour shifts only. In the case of workmen employed at

reverberatory and slag furnaces, converters, Pattinson and refining melting pots in works where such apparatus is only used periodically and during not more than 10 weeks in any one year by the same men, a 12 hours' shift containing 10 hours' actual work may be substituted for the 8 hour shift.

Smelters shall not be employed in American furnaces for more than 6 hours in any one shift; work in the processes in question shall, as far as is practicable, be so divided that after every period of two hours' work each workman shall have 2 hours' rest.

The length of each shift for workmen employed in clearing out the condensing chambers and conduits containing dry condensed dust, grinding and packing litharge and similar substances containing lead, such as zinc dust, shall, unless the work is entirely done by machinery, not exceed 6 hours, during which the actual time worked shall not amount to more than 4 hours. This period of employment shall, as required, be interrupted by ample intervals for washing and rest. There shall be periodical changes in the staff employed in such work so arranged that in any one week no workman shall be employed therein for more than three days.

Workmen employed in cleaning and breaking up furnaces and in repairing furnaces in zinc smelting works, shall only be employed in 8 hour shifts. In the event of such work being done in lead smelting works, the provisions contained in the third paragraph of this regulation shall apply to the workmen so employed.

After consultation with the workmen's representatives, the mining authorities, in agreement with the Provincial Government and in conformity with the applicable statutory provisions, may permit, subject to revocation at any time, exceptions to the restrictions on the length of shifts and periods of employment laid down above, if the results of investigations made and the report of the medical practitioner, who must be consulted on the matter, show that the lengthening of the shifts and periods of employment will not endanger the health of or cause any great hardship to the workmen concerned.

14. It shall be the duty of the owner of works to provide working clothes, consisting of at least trousers, a blouse and a cap, for workmen engaged at the apparatus and in the processes named in regulation 13, and in all other occupations in the course of which dust containing lead is generated.

Where hygienic considerations so require, the workmen shall also be provided with gloves.

The owner shall furnish workmen employed in cleaning out condensing chambers and conduits, or in similar occupations, in the course of which they are exposed to an exceptional extent to the effects of dust containing lead, with dust guards (respirators, sponges, etc.) covering the mouth and nose.

15. The clothes, gloves and dust guards prescribed in regulation 14 must be furnished in proper condition and sufficient quantity to workmen employed in the occupations concerned. The owner shall see that the working clothes are regularly cleaned,

washed at least once a week, and repaired whenever necessary; he shall also see that the dust guards shall always be in a condition fit for use.

Working clothes and dust guards must not be stored in the workrooms.

16. In all works there shall be provided in connection with the workrooms for the use of the workmen a special washing and bath room, a cloakroom for dressing and undressing, and a mess-room, which must be protected against dust.

These rooms must be cleaned and always kept free from dust by being washed with cloths or sluiced with water, and they must be heated in the cold season. In new premises the bathroom shall be contiguous to the washing room.

The floor of the washing room and bathroom must be impervious, and the walls must be washable to a height of at least two metres. The washing room must be fitted with hot and cold water taps, and with the necessary basins, which must be easily cleaned. The necessary number of shower baths with hot and cold water and bathing tubs must be provided. Water glasses, nail-brushes and soap must be kept in readiness in the washing and bathroom. Every workman who, in conformity with regulation 20 (4), is obliged to use the bath must be given a clean towel at least once a week.

The washing and bathing installations must always be in a condition fit for use. Every workman must be given an opportunity of using the washing and bathing arrangements.

Working clothes and clothing removed before starting work shall be kept separately in cupboards provided for the purpose or suspended at a height in the cloakroom. Clothing must not be so suspended except in rooms which are entirely free from dust.

In the mess-room arrangements for warming food shall be provided in a suitable place.

With respect to works already in existence before this Order comes into operation, the mining authority shall, in special cases, have power to relax the requirements relating to the provision of washing and bathrooms.

17. A superintendent, or some other responsible official, shall be appointed by the management of the undertaking to see that the washing, bath, cloak, and mess rooms are kept in proper condition; the said official shall report to the manager, or his representative, any defects in these rooms or their installations with which he cannot deal himself, in order that they may be remedied.

18. Only such persons shall be employed in lead and zinc smelting works as have been certified by a medical practitioner to be suited to the work offered.

It shall be the duty of the owner to cause workmen employed at the apparatus and in occupations named in regulation 3 to be medically examined at least once a month, especially with a view to detecting any symptoms of lead poisoning.

Workmen employed in other occupations in smelting works shall undergo this examination at least once a quarter.

Workmen who, according to the medical opinion, are suspected of suffering from lead poisoning shall not be allowed to work in the rooms specified in regulation 2, nor in the manner contemplated in regulation 13.

With respect to workmen who are recognised to be suffering from lead poisoning, if the examining medical practitioner shall consider that they may still be employed in smelting work at all, they shall only be employed in the processes specified by him.

Workmen who are particularly susceptible to the effects of lead shall be premanently excluded from employment in the occupations specified in regulation 2 and in the manner contemplated in regulation 13.

19. In order to supervise the health of workmen employed in smelting works, a register shall be kept at every works containing the following particulars respecting every workman :—

- (1) His forename, surname, age and residence, the date when he entered and left the employment, his medical condition when taken on, and the nature of the work allotted to him.
- (2) The days on which the medical examinations prescribed in the second and third paragraph of regulation 18 are held, and the results thereof, and the name of the examining medical practitioner ;
- (3) In the event of any workman falling ill :—
  - (a) The date on which he is taken ill and the nature of the illness.
  - (b) The date of his cure.
  - (c) The nature of the lighter work, if any, offered to the workman after he is cured.

The entries in the register respecting the results of medical examinations shall be signed by the medical practitioner entrusted with the medical examinations as being correct, unless he shall have made such entries himself.

The register shall be laid before the mining authority and the representatives of the Provincial Government, on demand.

20. The owner shall include the following provisions in the rules of service (regulation 200a. B.G.) issued for the workmen employed in his smelting works.

- (1) The workmen shall, in conformity with the rules, use the working clothes, gloves and dust guards in the rooms and occupations for which they are prescribed (regulation 14) ; they shall remove them when the shift or the work is finished, and put them away in the prescribed places. Clothing shall only be put on and taken off in the cloakroom ; in no circumstances shall the said clothing be taken into mess-rooms or dwellings.
- (2) The workmen must not take food or drink into the work-rooms. Meals must not be taken in the workrooms, but in the mess-rooms.

- (3) Every workman must, before taking any meal and also after the termination of the shift, thoroughly clean his hands, face, mouth and teeth; such cleaning must always be done in the washing rooms.
- (4) All workmen employed in occupations where, in accordance with regulation 13, paragraphs 3 and 4, the length of each shift must not exceed 6 hours, and the period of actual work must not amount to more than 4 hours, must take a bath once daily, and all other workmen employed in the smelting works must take a bath whenever necessary, and at least once a week, at the works on each occasion on the termination of a shift. Only workmen for whom bathing has been medically certified to be unsuitable shall be freed from this obligation.
- (5) Cigars and cigarettes must not be smoked in any work-room, and pipes must not be smoked nor tobacco chewed during the following processes:—Clearing out condensing chambers and conduits, cleaning and breaking up furnaces, working at American furnaces, distilling zinc, sifting, grinding, packing litharge or other products containing lead.
- (6) Workmen who, in spite of repeated warnings and of the penalties inflicted in accordance with the rules of service, contravene the foregoing regulations may be dismissed before the expiration of the contracted period and without notice.

21. The owners must instruct the persons entrusted with the management of the business to insist emphatically on strict compliance with the regulations issued in pursuance of regulation 20, paragraphs 1-5, and to supervise continuously the observance thereof.

The persons so instructed shall, in accordance with the rules of service, be answerable for the observance of the aforesaid regulations.

22. Copies of this Order and of the rules to be issued by the owner in pursuance of regulation 20, shall be fixed in every work-room and in the cloakrooms and mess-rooms and shall be given to all officials and superintendents in the undertaking, so that they may observe them and give the workmen instructions accordingly.

23. The workmen shall be instructed in a suitable manner in the nature and symptoms of lead-poisoning and in the methods whereby they can protect themselves against such poisoning.

24. This Order shall come into operation three months after its publication in the *Reichsgesetzblatt*; in cases where, for the execution of any of the provisions, buildings or installations have to be constructed, the mining authority shall allow suitable periods of transition.

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**AUSTRIA.****Health and Safety Regulations relative to Industrial Concerns in which Printing, Lithography, and Type-casting are carried on.**

(23rd August, 1911.)

**I.—SPECIAL MEASURES RESPECTING THE CONDITION OF INDUSTRIAL WORKSHOPS, WORKROOMS, AND THEIR INSTALLATION.**

1. Wherever it is not otherwise hereafter provided, all rooms in industrial establishments used for the purpose of printing, lithography or type-casting, where such are installed in new premises, shall at least fulfil the requirements in the Ministerial Order of 23rd November, 1905 (R.G.B1., No. 176), "new premises" within the meaning of the Order being understood to include any change of premises which may necessitate renewal of permission to work in certain premises. Existing premises, other than those that fall within the meaning of "new premises" in this Order, shall have sufficient light, be well ventilated, and be capable of being heated when necessary. Rooms used for the purpose of type-setting, both hand-setting and machine-setting, and the making-up department, shall be well provided with daylight, and a strict fulfilment of all the requirements of hygiene shall be adhered to in regard to artificial lighting.

Rooms in which the undermentioned work is done shall be of such dimensions that every workman employed therein shall have a minimum air-space of 15 cb.m. and a floor-space of 3 sq.m.

The minimum height of these rooms shall be 3 metres, wherever the building regulations do not require more.

The kinds of work referred to are as under :—

- (1) The preparation of type-metal containing lead (*i.e.*, the melting, mixing, or melting-down thereof).
- (2) The making of letters and type material from type metal containing lead.
- (3) Stereotyping and backing clichés.
- (4) Work on type-setting machines wherever lead-containing type-metal is used.
- (5) All work with lead-containing type-metal (*i.e.*, setting and distributing, sorting, dividing, wrapping, etc.).
- (6) All work with dry lead colours.
- (7) Bronzing with bronzing powders and the cleansing of bronzing machines and their spare parts.

In all other rooms not used for the above-mentioned purposes, an air-space of 12 cb.m. and a floor-space of 2'6 sq.m. shall be sufficient for each workman.

In certain special and temporary cases the industrial authorities of first instance may permit a closer occupation of type-setting rooms for a maximum period of 60 working days



per annum, and of the remaining workrooms for a maximum period of 30 working days per annum, allowing a minimum of 12 cb.m. air-space per workman for those included in Part II of this section, and for all others a minimum of 10 cb.m.

In all new premises underground rooms shall on no account be used for work included in paragraph 2 (2)-(7), nor for any kind of printing, except that done by heavy rotary or other specially heavy machinery; while for any other kind of work, underground rooms may only be used when, in cases where their height from floor to ceiling does not exceed 4 metres, at least four-fifths of their height on the window side lies higher than the level of the adjoining soil, but if the height from floor to ceiling exceeds 4 metres, then at least three-quarters of the height must be above the level of the ground.

A workshop already existing and approved on the day that this Order shall come into force, shall, on moving out of its rented premises, generally be subject to the same regulations, provided a renewal of licence is necessary, although exceptions may be permitted by the political provincial authorities, if the underground rooms in question, in consideration of the special work for which they may be employed, are unobjectionable from the hygienic point of view, and particularly if they receive sufficient daylight and are so situated as to be capable of thorough airing by windows of adequate size that look out direct into the open air, and not on to interior court-yards, or yards covered with skylights. However, when the exceptions affect the condition of workmen coming under paragraph 2 (1)-(4) and (6), they shall only be granted when they affect no more than five men in the case of (1)-(2); three men in the case of (3)-(4); and two men in the case of (6).

For certain work that by nature of the conditions under which it has to be done, is inseparable from high temperature and dust, such as the melting of lead or type-metal, operating type and line-setting machines, stereotyping, making-up, and polishing the type, etc., a special building or at least a special department shall be provided, which shall be entirely separate from the remainder of the premises and, when it is technically possible, divided into compartments and closed in such a way that neither heat nor dust shall disturb or endanger the health of other workmen not engaged in that particular kind of work.

In addition, type-setting and printing rooms shall, wherever possible, be separated from one another.

Bronzing with bronzing powder shall, wherever technically possible, be done in separate buildings or departments, and wherever done on a large scale, suitable dust-proof machines shall be used.

2. All workrooms mentioned in regulation 1, paragraph 2, and also all other rooms used for the purpose of printing, shall have a firm and smooth flooring, free from joints, which shall

be either painted whenever necessary, but at least twice a year, with a sanitary dust-binding material, or must be easily washable. A good, closely-laid wood floor, except in rooms where work is done of the kind mentioned in paragraph 2 of regulation 1 (1)-(4) and (6), except where it is a question of grinding only small quantities of dry lead colours in the press-room itself, shall be considered as equivalent to such a floor as above described.

In rooms where workmen are, by the nature of their work, obliged to remain standing in the main for lengthy periods in one place, the floor, or at least that part on which they stand, shall be made of heat non-conducting material.

The walls of rooms used for the purpose mentioned in paragraph 2 of regulation 1 (1)-(6), except where it is a question of grinding only small quantities of dry lead colours in the press-room itself, shall be covered with a smooth, crack-free and easily washable preparation to a height of at least 2 metres, or with a coating of oil paint, which shall always be kept in good condition. The remainder of the walls and the ceiling, as well as the other workrooms in general, may be whitewashed, and this shall be renewed whenever necessary.

Respecting the covering of walls with oil paint, the owner of rented premises may obtain an exemption from the industrial authorities, when his tenant can prove that he purposes leaving the premises hired by him in a comparatively short time. A sufficient number of spittoons filled with liquid or with moist material, shall be placed in all the workrooms referred to in regulation 1, paragraph 1, and they shall be properly cleansed at least twice a week.

3. In new premises, and also, whenever possible, in old premises, where an average of more than twenty workmen are employed, there shall be sufficient washing and dressing accommodation for all workpeople that come under paragraph 1 of regulation 1; separate lockers shall be provided for the storage of ordinary clothes and those worn in the workshop, while during cold weather the room shall be suitably heated.

In already existing establishments where the installation of such special rooms is not feasible, and in all industrial establishments where an average of twenty workmen are employed at least, good tight-fitting clothes-boxes shall be provided. These clothes-boxes shall permit of a complete separation between ordinary clothes and those worn in the workshop.

In industrial establishments in which printing and type-casting operations are regularly carried on, not only by day, but also at night (*i.e.*, between the hours of 8 p.m. and 5 a.m.) the workpeople engaged in work of the nature described in regulation 1, paragraph 1, shall, in addition, be provided with a suitable detached room for meals, and this room shall also be suitably heated during the cold weather.

4. As regards steam boilers and power machines, shafting, work machines and installations, lifts and hoists, and transport arrangements, the provisions of the Ministerial Order of 23rd November, 1905 (R.G.B1., No. 176) shall apply, except in so far as more far-reaching provisions are contained in the following :—

- (a) Every machine shall be provided with a stop-motion lever that shall always be within easy reach of the workman when standing at his usual place before the machine, and quick and easy to operate. This stop-motion lever shall be so regulated and guarded that it shall be impossible for the machine to start of its own accord. Double-feed, flat-bed printing machines and rotary machines shall be provided with such stop-motion levers on both of their two long sides. Special provisions shall also be made in the case of high-speed and rotary machines to prevent premature or accidental starting. When high-speed and rotary machines are driven by electricity they shall be provided with two switches, one for starting, and another for stopping, which shall be placed at a considerable distance from one another.
- (b) Rotary machines shall be provided with a loud signal alarm that shall be easily heard above the noise of the machinery, and which shall be sounded before setting the press in motion.
- (c) Provision shall be made to prevent the high platforms of rotary machines, and also, when necessary, of high-speed machines, on which the machine attendants stand, from giving way.
- (d) Suitable provision shall be made for the transport of heavy lithographic stones and press formes, and for lifting them in and out of the machine; also in fitting up and repairing large presses suitable devices shall be employed for fitting heavy cylinders and other heavy machine parts into their respective places.
- (e) Platen machines shall be provided with devices which shall effectively prevent the risk of injury to the hands of operators when the press is being closed.
- (f) The front part of the slot through which the knife falls in the paper guillotine shall be suitably protected by sheet-iron guard.

5. The deleterious fumes arising from the melting-pots of ovens used for preparing type-metal stereo plates, etc., and also, when ever technically possible, from the melting-pots of linotype machines, shall be conveyed by a suitable arrangement directly out into the open air or into a main chimney. All piping necessary for this purpose shall be covered with non-conducting material, so that the heat shall not disturb or endanger the health of the operator.

The melting pots themselves shall also, whenever possible, be covered with non-conducting material.

Suitable large trays or receptacles shall be placed under type-casting and linotype machines wherever their construction shall permit it.

## II.—SPECIAL INDUSTRIAL REGULATIONS.

6. The manipulation of ink rollers or formes once they are placed in the machines, such as knocking down a black, shall only be done when the machinery is at a complete standstill. This regulation shall be put up in a conspicuous part of the workshop.

All explosive liquids, such as turpentine, benzine, methylated spirit, etc., shall be kept in explosion-proof barrels, and only allowed in the workshops in quantities never more than is necessary for the average requirement of one day.

Women employed at machines shall not wear light, flimsy clothes, nor hanging plaits, nor wear their hair loose when engaged at their work. The sleeves of their dresses shall, when they reach below the elbow, be securely fastened round the wrist.

No rings shall be worn when working at work machines (Carbutsmachine), rotary or high-speed presses.

A liberal supply of first-aid material, such as cloths, bandages, antiseptic gauze, antiseptics and remedies to stop bleeding, shall be to hand.

7. No women workers and boys under sixteen, unless apprenticed, shall be employed in treading platen machines, nor at work mentioned in paragraph 2 of regulation 1, nor at any work where the operator cannot avoid being covered with already ground lead colours, and so made very dirty, such as at washing colour rollers and cleaning colour boxes.

The only exceptions to this regulation shall be as under :—

- (1) The employment of women of more than seventeen years of age for bronzing ;
- (2) The employment of women of more than sixteen years of age for the following type-casting operations : dividing-up, sorting, setting and distribution of type, etc., and also in warehouse and packing operations.

Apprentices under sixteen years of age shall not be employed in bronzing with bronze powder, or blowing out type-cases, and other cleaning operations connected with considerable formation of dust.

8. All workrooms shall be well-lighted, heated, and thoroughly ventilated during working hours, and in addition they shall be thoroughly aired out of working hours once a day. Workrooms referred to in paragraph 2 of regulation 1 shall be thoroughly aired out of working hours at least twice a day.

In industrial establishments where workmen mentioned in paragraph 1 of regulation 1 are employed on day and night shifts, workrooms shall have a thorough airing at the end of each shift as well as one during the long pause of each shift.

9. The floors of all workrooms shall be cleaned every day out of working hours, and whenever possible by a wet process.

The washing-rooms, dressing-rooms, and rooms where workmen take their meals mentioned in regulation 3 shall also be kept in a thoroughly clean and proper condition.

That part of the wall which is washable shall be cleaned by a wet process at least once a month.

The type-setting desks and drawers and other installations shall either stand on the floor so that no dust shall collect beneath them, or there shall be sufficient room under them for the floor to be easily cleaned.

Type-cases in continual use shall be cleaned when necessary, but this must be done at least once every three months, while other type-cases that are only used occasionally shall be cleaned thoroughly before use, and the date of the last cleaning shall be clearly marked on each type-case.

The cleaning of type-cases, and also of the standing and permanent formes, shall be done wherever possible with suction apparatus, or by a wet process; in any case, it shall be done in such a way that the operator is protected from the dust formed thereby. Cleaning by means of bellows shall only be done in the open air.

The interior of type-setting desks and drawers shall be cleaned when necessary, but this shall be done at least once every three months, and, wherever possible, with a good suction apparatus.

The whole establishment, including all rooms and, more especially, walls and shelves, shall be thoroughly cleaned twice a year.

When much dust is raised by cleaning, this cleaning shall be done out of working hours.

The use of washing and cleaning materials dangerous to health, especially crude turpentine, is prohibited.

10. The crushing and grinding of white lead and lead compounds, also mixing, kneading and rubbing the same with oil or varnish in the preparation of lead colours, shall only be carried out by means of mechanical appliances, and in such a way only that those employed at the work shall be protected from the dust formed thereby. Workmen shall also be protected from dust in the operation of filling and emptying the different receptacles, and no dust shall reach the workrooms.

Tubs and receptacles used for storing and treating lead colours shall have their lead contents clearly and distinctly marked on the outside.

11. The employer must, by means of suitable notices, require workmen employed in the processes named in regulation 1, paragraph 2, as well as printers and machine operators to make use of suitable working clothes, in so far as they have to undertake

printing operations with setting material containing lead or with bronze powder, and he must provide those workmen who are employed in the works enumerated under regulation 1, paragraph 2, sub-sections (6) and (7), as well as women employed in type-casting, type-casting apprentices and unqualified type-casting assistants, with working clothes, and the first-named [regulation 1, paragraph 2, sub-sections (6) and (7)] with head-coverings also.

The employer shall also see to it that the clothes provided by him are, at his cost, properly washed, and that the clothing and head-coverings used by workmen mentioned in paragraph 2 of regulation 1 (7), when they are regularly employed at bronzing are freed from dust every day. When bronzing is not done every day the clothes shall be freed from dust every time they are used.

The employer shall provide all workmen doing work in which a considerable amount of dust is produced, especially bronzing, grinding dry lead-containing colours, etc., with a special dust-proof protector to prevent dust from entering mouth and nose (respirator and so forth): and this protector must always be kept clean.

12. The employer shall provide all workmen employed at work mentioned in paragraph 1 of regulation 1 with sufficient good drinking water; also suitable washing accommodation with running and, wherever possible, warm water, soap, nail-brushes, and one clean towel per week for each workman.

As a rule, there shall be at least one wash-place for every five workmen.

13. All workmen shall be bound to carry out the directions of their employers respecting this Order, or in default be liable to incur the penalties stated in regulation 17.

Similarly, all workmen employed at work mentioned in paragraph 2 of regulation 1, and foremen printers and machine foremen, when they have to work with lead-containing type metal or with bronzing powders, shall be bound :

to wear the clothing and head-coverings, and to use the protective apparatus and safeguards prescribed in regulation 11 ;

to wash the face, mouth and hands thoroughly, with warm water wherever possible, after work, or even when work is temporarily interrupted: the hands especially shall be well cleansed with soap and nail-brush ;

to keep their work-clothes only in the dressing-rooms, or, as the case may be, in the clothes lockers, especially provided for this purpose, as stated in regulation 3 ;

to submit regularly to the requisite medical examination, according to regulation 15 ;

and at the appearance of the first sign of lead-poisoning, or at the order of the periodically visiting medical man, to apply at once to the club doctor.

Workmen employed at work mentioned in paragraph 2 of regulation 1 shall be prohibited from :

taking or keeping food or alcoholic drink in their work-rooms or consuming them there ;

smoking or using tobacco in any form, cigars, cigarettes, pipe-tobacco, chewing tobacco, or snuff, in any part of the workshop except in the rooms specially set apart for this purpose ;

entering the rooms set apart for meals in clothing that has been worn in the workshop or without having thoroughly washed ;

and expectorating in any part of the workrooms except in those receptacles provided for the purpose.

The employer shall be prohibited from permitting smoking or the use of tobacco in any form by workmen mentioned in paragraph 2. except in dining and recreation rooms.

### III.—REGULATIONS RESPECTING SPECIAL SUPERVISION.

14. In all workrooms mentioned in paragraph 1 of regulation 1, the employer shall affix in a prominent position and always keep in a readable condition :

(1) a copy of this Order ;

(2) a statement, the correctness of which must be certified free of charge by the competent industrial authorities, relating to the length, breadth and height of each particular room in metres, its air content in cubic metres, and the number of workmen that may be permitted to work in the said room according to regulation 1.

The employer shall also be bound to give free of charge to every new workman employed at work mentioned in paragraph 1 of regulation 1 a copy of the Special Notice accompanying this Order as a supplement.

The employer shall endeavour to secure the strict observance of all the regulations of this Order by the workmen, and for this purpose he shall affix notices in convenient places, and also, wherever necessary, appoint superintendents selected from among the workmen.

Notices shall also be affixed in the workshops, giving the names and addresses of the nearest sick-club medical men, as supplied by the sick-club authorities.

15. Medical officers appointed by the Political Authorities of first instance shall examine all workmen mentioned in regulation 13, paragraph 2, employed in establishments in their district or within a radius of 3.8 kilom. for possible symptoms of lead-poisoning, at least once a quarter, and in other establishments at least once a year. The medical officer shall give previous notice of the day and hour of his purposed visit to the employer.

This medical examination shall usually take place at the works out of working hours, either before the beginning or immediately after the end of same, though not after overtime hours. The examination shall only take place during working hours with the consent of the employer. Workmen shall receive no compensation of any kind for the time employed for the purpose of such examination, neither shall any deduction be made from their wages on this ground.

The examining medical man shall inform the employer of the result of his examination, and any persons who may show signs of lead-poisoning shall be sent immediately to the sick-club medical man. The result of the examination shall be entered by the medical officer on certain specified forms, to be prescribed for these purposes, and placed before the Industrial Authorities.

Workmen with respect to whom the employer has been informed that they are suffering from lead-poisoning, or if the examining medical man has notified symptoms of this disease, shall only be employed again at work mentioned in regulation 13, sub-section (2), by written medical permission.

The workman shall for this purpose hand to the employer a written confirmation of the above, signed by the medical man of the Fund or, as the case may be, of the medical man who is treating him.

16. In case of accident, notice shall immediately be given to the employer either by the workman to whom the accident has occurred, or, if he shall be unable to do so, by eye-witnesses thereof.

#### IV.—PENALTIES FOR NON-OBSERVANCE.

17. Penalties for the non-observance of this Order are stated, in the Ministerial Order of 30th September, 1857 (R.G.Bl. No. 198), so long as it does not come within the range of the penal or industrial codes.

#### V.—DATE OF COMING INTO OPERATION.

18. This order shall come into force immediately as regards every workshop that is established after the date when this Order shall be published, while as regards already existing and approved workshops, it shall come into force one year after date of publication.

The provisions of this regulation shall, however, only apply to establishments which are already approved on the date of publication of this Order, in so far as the alterations in the establishments required thereby can be carried through without limiting the rights acquired by the licence, unless it is a question of the removal of improper conditions which are evidently endangering the life or the health of the workmen, or the demands therein contained can be carried through without disproportionate expenditure and without undue disturbance of the working.



## NOTICE.

All work in which lead, lead compounds or lead alloys are employed may cause lead-poisoning.

Lead-poisoning may be caused by lead in any form, even in very small quantities but on repeated occasions, being taken into the mouth or entering the system through the medium of dirty hands, beard or moustache, and clothes, while eating and drinking or smoking, chewing tobacco or taking snuff, or even by being inhaled in the form of dust while working, or in any other manner.

The result of this insidious absorption of lead in small particles only becomes noticeable after a long time when the body has stored up sufficient quantity to produce the customary symptoms of lead-poisoning.

The first signs of lead-poisoning are a blueish-grey edging round the gums, known as a "dark line on the gums," a typical paleness of the face and especially of the lips, and bad digestion and loss of appetite.

Later symptoms are severe cramp in the stomach, often accompanied by vomiting and irregular action of the bowels, and occasionally diarrhoea (known as lead colic), pains in the joints, symptoms of paralysis, headaches, great restlessness, cramp all over the body, fainting, and even blindness and severe brain trouble, that not infrequently terminate fatally.

Lead-poisoning may usually be cured if taken in time and with proper medical treatment, provided those attacked by it are able to withdraw from their dangerous employment.

Lead-poisoning may be guarded against by carrying out the following

*Instructions for the Prevention of Lead-Poisoning.*

1. The greatest cleanliness shall be observed at all times, both while at work and out of working hours, and the greatest care shall be taken to raise as little dust as possible.

2. Special working clothes shall always be worn in the workshop, and when employed on very dusty work workmen shall always wear a head-covering and a respirator or similar apparatus. Such clothing shall be changed at least once a week. Ordinary clothes shall be kept in a suitable place away from all dust and dirt during working hours.

3. Workmen who have to work with lead, lead compounds or lead alloys shall eat plenty of nourishing, and whenever possible, fatty food, and avoid the use of alcoholic drinks.

4. Food or alcoholic drink shall not be brought into or kept or eaten in the workrooms, neither shall the use of tobacco in any

form (cigars, cigarettes, pipes, chewing tobacco or snuff) be permitted under any conditions in the workrooms or adjacent rooms, except in such places where it is expressly permitted.

5. All food brought in by workmen, or brought to them, shall be kept out of the workrooms and thoroughly protected from dust or dirt, and it shall only be eaten during those intervals, and in such cases where special rooms are set apart for the purpose.

6. After work, and even when work is temporarily interrupted, the hands and face, and specially the beard and moustache and mouth, shall be thoroughly washed and, whenever possible, warm water shall be used for this purpose. The mouth shall also be rinsed out with clean water every time before drinking.

7. Washing, whenever it is possible to avoid it, shall not be done in the workrooms.

8. Workmen shall not keep tobacco, smoking materials, and food in the pockets of their working clothes.

9. Every workman shall take a bath at least once a week, care being taken to thoroughly cleanse hair, beard and moustache.

10. Every workman shall consult a medical man as soon as he shall experience the least indisposition, and shall draw his attention to the fact that he works with lead, lead compounds or lead alloys.

#### *FURTHER NOTICE.*

Spitting in the workrooms except in those receptacles provided for the purpose, shall be strictly prohibited.

Information shall immediately be given to the manager of any accident that may occur.

**AUSTRIA.****Decree relating to the Protection of Workmen employed in Printing and Lithographing Works and Type Foundries.**

(17th July, 1912.)

The Ministry of Commerce, in the course of its endeavours to prevent lead poisoning in smelting works and industrial concerns and in agreement with the Ministry of the Interior, issued on 23rd August, 1911, a decree, on the basis of uniform expressions of opinion received from interested parties, containing special regulations for the protection of the life and health of persons employed in printing and lithographing and also in type foundries, carried on by way of trade.

This decree has been published in Part LXXIV of the *Reichsgesetzblatt* as No. 169.

In order to respond to the wishes contained in the above-mentioned opinions, which were expressed unanimously by the trade circles concerned, the following is notified to the authorities (*Statthalterei*), in agreement with the Ministry of the Interior, for its own guidance and for the information of the industrial authorities of first instance and the Chambers of Commerce and Industry.

The decree shall not only apply to industrial printing and lithographing works and type foundries, but, without distinction, also to all industrial concerns in which printing, lithographing and type founding are carried on by way of trade.

In the cases provided for in regulation 1, paragraph 5 (*i.e.*, in the case of the removal of concerns, already existing and approved on the date on which the decree was published, in rented premises), in which exemptions from the general provisions with respect to the use of underground rooms may be granted by the provincial authority, the *Statthalterei* when deciding on each individual case, will have to take into consideration the existing conditions, and carry through with special urgency the necessary official proceedings. The industrial authorities of first instance shall also be instructed in this sense.

The reason for special urgency is that the owner of the undertakings in question can only definitely hire the premises in view if he has the certainty that he will obtain the consent of the industrial authority. As, however, the owner of the house will, as a rule grant to him only a very short period for making his decision, it will be to the interest of the owner of the undertaking to be in possession of the decision of the authority within the shortest possible time.

For this reason it will be advisable to authorise the subordinate authority, instructed to obtain evidence as a committee, to grant, if possible, the exemption on behalf of the provincial authority in all cases in which the documents sent in with the application

justify the assumption that no essential objections exist against the granting of the permission. For this purpose it shall be the duty of the authority of first instance, with whom the application for approval has been lodged, to submit in such cases the records to the provincial authority for decision during the interval between the bringing in of the application and the meeting of the committee. If the documents submitted with the application do not give a clear idea of the matter, the authorities (*Statthalterei*) shall be authorised, in specially urgent cases, in particular in places where there are situated also the offices of a provincial authority, to send out, already for the first inspection by the committee, expert representatives of the provincial authority duly authorised to give a decision. These representatives may, for instance, consist of the official authorised to deal with the matter in question, and an expert to assist him, and these representatives may in given cases express directly during the official proceedings of the committee the consent of the provincial authority.

In paragraphs 6 and 8 of regulation 1 a separation of the several localities or departments is demanded, if such is practicable or possible from a technical point of view. Such a practicability or possibility shall be considered as existing if the separation appears to be practicable or possible in view of the position of the building, the conduct of the entire works, or at least the conduct of the departments in question.

As regards bronzing, in particular, attention must be given to the question whether, in a definite case, it is not possible from a technical point of view to effect a separation of the bronzing room from the machine room.

As regards the stipulation of regulation 3 to the effect that the lockers or arrangements placed at the disposal of the workers for keeping their working and outdoor clothes must make it possible to keep the said clothes separated, it may be mentioned that this requirement will be already complied with if, in the bottom part of the lockers in question, a horizontal board is fitted which makes it possible to place the working clothes in the compartment thereby provided in the bottom of the locker. By this means it becomes possible to hang up the outdoor clothes without risk of their being damaged by pressure or of being soiled by lead dust, which might fall on them and would then be carried in the clothes to the private dwellings of the workers.

The decree further distinguishes in several places between work and workers, referred to in regulation 1, paragraph 1, and regulation 1, paragraph 2, respectively. The former include all printing, lithographing, and type foundry work or workers employed in the same in general, and the latter only those kinds of work and the persons employed therein as are enumerated in detail in regulation 1, paragraph 2 (1)-(7).

As regards the confirmation "without charge" of the statements on the conditions of space of the several workrooms,

required by regulation 14, paragraph 1 (2), it must be observed that the decree starts from the point of view that no unnecessary charge should be laid upon the owner of the undertaking.

In new plants it will be possible to ascertain the facts in question in connection with the proceedings of the committee approving the same. In existing plants, however, with respect to which the decree comes into operation only after the expiration of one year from the date of publication, any expenses by the committee in connection therewith may, as a rule, be avoided, even if the concern in question is not situated at the seat of the industrial authority, by the said approval being given either on the basis of existing plans or on the basis of an inspection on the occasion of any other official proceedings taking place in the said town during the transitory period. As regards finally the official medical examinations (regulation 15), attention is drawn to the fact that these examinations must, as a rule, take place, in accordance with regulation 15, outside the working hours of the person to be examined. This rule may be deviated from only should the interest of the official medical service require it, but in every case only with the consent of the manager of the industrial concern in question. If such consent is not given, the examination must be postponed to another day or take place outside the working hours. For carrying out an examination outside the working hours it is not necessary to obtain the consent of the manager of the concern previously. The said manager must, however, be communicated with, so that, should it be intended to work overtime just at the time fixed for the examination (with a consequent postponement of the hour at which work terminates, after which hour the medical examination may not take place in accordance with regulation 15, paragraph 2), he may, on the one hand, inform the medical officer of the fact and on the other hand, advise the workers in good time that the examination is to take place. The mid-day interval may not be used for such examinations, as it is expressly stated in the decree, "before the commencement or after termination of the working hours," in which connection there must be understood by working hours the total hours worked per day, which do not terminate, but are only interrupted, by the mid-day interval. In addition to this, the medical officers must have regard, as far as possible, to any wishes which may be expressed with respect to the period of examination.

The printed forms, referred to in paragraph 3 of this section, for entering the medical report, shall be drawn up according to the specimen attached to this decree.

The columns concerning general data shall be filled in on the basis of the wages' lists in all cases where such are kept, but otherwise on the basis of the indications of the management of the concern. If there is any indication justifying the assumption that the statements made are not in accordance with the facts

it will be advisable to control in a suitable manner the correctness of the statements made.

Particular importance must be given to the filling-in of all the details in the columns concerning ascertained indications of lead poisoning. Columns 7, 8, and 9 shall be filled in by the sick fund, in the sick or sick-pay lists of which the worker who has shown symptoms of lead poisoning had been entered or on the basis of a communication from such fund. The object of this provision is to establish, with the greatest degree of certainty, whether certain indications, which during the periodical examination appeared to show the existence of lead poisoning, may not be attributed to any other cause, as, for instance, in the case of anæmia, digestive disturbances, trembling, and the like.

For every concern two sheets are intended to be used, the one perforated and the other without perforation. The former, with the exception of columns 7, 8, and 9, must be filled in, in the first instance, by the medical officer, who shall make at the same time a carbon copy; on the back of the second, non-perforated sheet, there is space for any possible remarks by the examining doctor—as, for instance, for noting down certain instructions given, etc. This sheet shall remain in his possession.

The particulars required for columns 7, 8, and 9 shall be obtained from the sick fund in question, if possible, by sending to such fund the perforated form to be filled in. It will be advisable to send in the forms at regular, but not too short, intervals, perhaps every three months; but the best way of proceeding in this respect will only be found by practice.

The particulars supplied by the sick fund for columns 7, 8, and 9 shall be entered by the medical officer in the copy which he keeps in his possession. The perforated sheets with all the columns duly filled in shall be sent to the provincial authority mentioned on the back of the sheet and be submitted by the latter to the Ministry of Commerce for cognizance to be taken and for further dealing with the same.

If during the inspection of a concern no indications of any lead poisoning were found in any of the workers, the words “ negative result ” are to be placed above columns 1 to 6 of the lower half of the sheet and the perforated sheet must be transmitted as a negative report, in the same way as the other copies, to the Ministry of Commerce through the provincial authority.

The provincial authority shall, at the end of the year, submit summarised reports with respect to the results of the examination to the Ministry of the Interior and the Ministry of Commerce.

In all those cases in which the medical officer may find that there are workers in any concern showing indications of lead poisoning, he must communicate the fact immediately also to the competent industrial inspector.

As regards the committees constituted in connection with the medical examinations it must be mentioned that the matter is not to be considered as one between parties and that consequently no compensation for costs incurred by the committee can be demanded by the owner of the concern as a party. The examinations in places which, by reason of their position, would cause expenses to the committee, shall take place, in order to avoid such expenses, on the occasion of other official acts of the medical officer in the said places, as for instance on the occasion of his periodical journeys.

As regards the supply of printed matter the instructions will be issued by the Minister of the Interior.

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### SCHEDULE.

#### *First Page of Cover*

#### MEDICAL EXAMINATIONS IN PRINTING AND LITHOGRAPHING WORKS, AS WELL AS IN TYPE FOUNDRIES.

In accordance with regulation 15 of the Ministerial Decree dated 23rd August, 1911 (R.G.B1., No. 169).

#### *Second Page of Cover.*

All persons employed on the following work are subject to examination in accordance with regulation 15 of the Ministerial Decree dated 23rd August, 1911 (R.G.B1., No. 169) :—

- (1) The preparation of type-metal containing lead (*i.e.*, the melting, smelting, mixing, or melting-down thereof).
- (2) The making of letters and type material from type metal containing lead.
- (3) Stereotyping and backing clichés.
- (4) Work on type-setting machines wherever lead-containing type-metal is used.
- (5) All work with lead-containing type-metal (*i.e.*, setting and distributing, sorting, dividing, wrapping, etc.).
- (6) All work with dry lead colours.
- (7) Bronzing with bronzing powders and cleansing of bronzing machines and their spare parts.
- (8) Printing work carried out by foreman printers and machine foremen where they have to work with type-metal containing lead, or with bronzing powders.





*Second Page*

No..... The.....day of.....191 ..

To the } District Sick Fund  
 } Works Sick Fund  
 } Association Sick Fund  
 } Society Sick Fund  
 } Registered Friendly Society

For the filling in of columns 7, 8, and 9.

District Superintendent's Office  
 Magistrate (Magisterial District Office)

No..... The.....day of.....191 ..

To the District Superintendent's Office

To the Magistrate (Magisterial District Office)

in.....

Returned after columns 7, 8, and 9 have been filled in.

(Stamp of the Fund.)

No..... The.....day of.....191 ..

Submitted to the Authorities (Statthalterei).

Provincial Government.

District Superintendent's Office .....

Magistrate (Magisterial District Office)

No..... The.....day of.....191 ..

Submitted to the Ministry of Commerce.

Authorities (Statthalterei) .....

Provincial Government

*Third Page.*

Same text at page 1.

*Fourth Page.*

SPACE FOR ANY POSSIBLE REMARKS OF THE EXAMINING DOCTOR.

(25 copies of the pages 1-4 of the Form are always made up in one cover.)

**LAWS (SWITZERLAND).****Use of White Lead.**

(26th October, 1907.)

*Article 1.*—The use of white lead, otherwise than in the form of paste, is prohibited for all public or private works, so as to exclude the form of powder whether for painting or for plumbing.

*Article 2.*—For the same works there is prohibited dry pumice-stoning, dry scraping-off and burning-off of old paint.

*Article 3.*—An Order of the Council of State shall prescribe rules of hygiene, to which masters and workmen shall conform, for the use of products composed of white lead.

*Article 4.*—Masters and workmen who contravene these present laws or the regulations shall be subject to the criminal law.

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**REGULATIONS (SWITZERLAND).****Use of Lead and its Compounds.**

(December, 1907.)

*Article 1.*—The use of white lead, otherwise than in the form of paste, is prohibited for all public and private works, so as to exclude the state of powder, whether for painting or for plumbing.

*Article 2.*—For the same works there is prohibited dry pumice-stoning, dry scraping-off and burning-off of paint.

*Article 3.*—There is prohibited the direct use with the hand of products with a basis of white lead for all painting and especially for *enduisage* (filling-in).

*Article 4.*—The same workmen shall not be set to pumice-stone freshly painted surfaces continuously. The employer shall see to it that the workman does not perform this work for more than one-half of his day at the most. Apprentices shall never be employed in this kind of work.

*Article 5.*—It is the duty of employers to provide for their workmen, without charge and in good condition, in all places of work and workshops—

- (a) Apparatus and utensils necessary for avoiding the use of white lead with the hand;
- (b) Overalls or blouses exclusively reserved for painting on buildings, of which employers shall see to the keeping and frequent washing;
- (c) Places or lockers sufficient to keep free from poisonous dust the clothing which workmen take off during their work;
- (d) The articles and accessories necessary to maintain cleanliness after each interruption of work, especially water, soap, and towels.

*Article 6.*—It is the duty of workmen to keep constantly in good condition the apparatus and utensils which they receive and never to scrape them down dry. They should, besides this, observe the orders which shall be given to them by their employers as to the use of everything which is handed to them.

*Article 7.*—Employers must draw the attention of their workmen by means of affixing in the workplaces and pay offices, the text of the law and of the regulations, reproduced in their entirety—to the dangers of poisoning to which carelessness may expose the workmen, and to the rules of hygiene which should be followed to avoid the contact of lead with the skin and absorption of poisonous matter and dust by the respiratory and digestive organs (in particular the danger of smoking and eating during and after work without having first ensured cleanliness—the danger of sweeping up the remains of paint without having first moistened them).

*Article 8.*—These regulations are applicable to all undertakings and works, public and private, and to all employers for building, whether they are or not already subject to the Federal Law concerning work in factories.

*Article 9.*—Employers who contravene the law and obligations which are imposed upon them by these regulations, as well as the workmen who contravene the law and Articles 1, 2, 3, and 6 of these regulations, shall be subject to the criminal law.

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## LAWS (NETHERLANDS).

## Classification of Trades.

Decree of the 21st August, 1916, S. 418, for withdrawal of the Royal Decree of the 27th June, 1913 (Staatsblad No. 317), modified by Royal Decree of the 20th April, 1914 (Staatsblad No. 185), and for fixing a general rule of Administration as referred to in Articles 6 and 7 of the Safety Law.

## SAFETY DECREE, 1916.

WE, WILHELMINA, etc.

On the proposal of our Minister of Agriculture, Industry and Trade of the 6th May, 1916, No. 901, Labour Department;

Having regard to Articles 6 and 7 of the Safety Law (made on 20th July, 1895, Staatsblad No. 137, last amended by that of the 19th June, 1915, Staatsblad No. 281);

Having heard the Council of State (advice of the 11th July, 1916, No. 28);

Having seen the fuller report of our aforesaid Minister of the 18th August, 1916, No. 1703, Labour Department;

Have thought fit and desirable to lay down the following enactments :—

## CHAPTER I.

## GENERAL PROVISIONS.

*Article 1.*—The workrooms in factories and workshops shall in this Decree be distinguished into and referred to, as

I. *Injurious*, under which, subject to the provisions of II *b*, there shall be understood :—

*Category A.*

Workrooms where, or where as a rule :

1. White lead is prepared;
2. Sugar of lead, oxide of lead (litharge) or red lead is prepared;
3. Lead ash is burnt and reduced;
4. Chromate materials are prepared;

\* \* \* \*

14. Electric accumulators are manufactured or repaired;
15. Zinc is extracted from ores;
16. Enamels are prepared or worked for the manufacture of enamelled articles, if the said enamels contain an amount of lead exceeding half per cent. of their dry weight;

\* \* \* \*

*Category B.*

## Workrooms :

1. Where the air may be contaminated by poisonous dust which spreads during bronzing, for instance in a printing office or a picture-frame workshop ;
2. Where as a rule poisonous paint is mixed, worked or used :

\*                      \*                      \*                      \*                      \*

4. Where polishing is done with metals containing lead.

*Category C.*

Workrooms where, as a rule dusts or vapours spread which, by reason of their properties, may have poisonous action such as acroline, ether, ammonia, amylacetate, aniline and its homologues and derivatives, arseniurated hydride, acetic acid, benzine, benzol and its homologues, methyl bromide, carbol, chloride, creosote, hydro-fluoride, formalin, methylated spirits, carbonic oxide, carbonic acid, quick-silver, naphthaline, nitrous combinations, nitro-benzol and its homologues and derivatives, phosgene, phosphorated hydrogen, picric acid, tetrachlorethane, carbon tetrachloride, zinc oxide, hydrofluoric acid, sulphurous acid, bisulphide of carbon, sulphuretted hydrogen.

\*                      \*                      \*                      \*                      \*

*Category E.*

Workshops where, as a rule, work is done with lead, lead alloys or lead combinations, in :

1. Weight adjusting works ;
2. Capsule factories ;
3. Printing works ;
4. Leaded glass factories ;
5. Small shot foundries ;
6. Type foundries ;
7. Type composing offices, including those in which a composing machine is used ;
8. Lead pipe factories ;
9. Lead flatting mills ;
10. Lead foundries ;
11. Metal-ware factories ;
12. Musical instrument manufactories ;
13. Organ pipe manufactories ;
14. Stereotyping plants ;
15. File cutting works.

*Category F.*

Workshops of diamond polishers and cleavers where work is done as a rule with lead, lead compounds or lead alloys.

\*                      \*                      \*                      \*                      \*

*Category L.*

Workshops in pottery works, in so far as lead combinations are prepared, applied or worked up in such workshops which contain more than half per cent. of their dry weight in lead, in any other form than sulphide of lead (lead glance, lead ore) or, if articles are handled therein, to which such lead combinations are applied.

*Category M.*

Workshops in which, by the use of an oven, a high temperature is produced, as for instance : bread, biscuit, cake and pastry bakers, varnishing works, pottery, porcelain and tile baking works and enamelling works.

II. *Non-injurious*, under which there shall be understood :

- (a) All workshops not mentioned under I ;
- (b) Workshops and also parts of workshops which are mentioned under I, so long as in respect of same a written and signed declaration applies to the effect that it is to be presumed that there no poisoning, infection or risk, damage or hindrance is occasioned by gases, vapours or dust by the processes of work. This declaration will be made by or on behalf of our Minister entrusted with the execution of this order.

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**UNITED STATES OF AMERICA (NEW JERSEY).****Regulations for the Lead and Copper Industries in New Jersey**

*(Issued in the form of a circular letter to these trades by the Commissioner of Labour, 1914.).*<sup>(1)</sup>

The lead and copper industries of the State having been reported upon by our consulting metallurgical expert and special investigator, I desire to call the attention of your company to the sanitary regulations governing these trades which are approved by the department of labour.

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<sup>(1)</sup> Published as an Appendix to "Lead Poisoning in the Smelting and Refining of Lead" Bulletin No. 141 of the United States Bureau of Labor Statistics.

I. In view of the dust generated in the handling, sampling, and transportation of ores, the department requires that care be exercised to protect the workers by means of a thorough sprinkling of such ores when practicable; that automatic machine sampling shall be the standard method; that the air of the sampling mill or mills shall be kept free from dust, either by means of sprinkling or efficient mechanical exhaust ventilation; that if no means can be devised to control the dust generated in emptying sacks containing lead ores, the workers engaged in such operation shall be furnished and required to wear an approved type of respirator; that no sacks in which lead or other ores have been shipped shall be cleaned by hand, but that all such sacks shall be cleaned by sanitary mechanical methods; and that all ores containing lead stored in bins shall be dampened before transportation.

II. As the roasting of lead ores, whether in furnaces or in sintering machines, or by any other method, may expose the workers to injurious fumes or gases, the department requires that when such danger exists, the points at which such fumes or gases enter the workrooms shall be properly hooded, and the hoods connected with efficient mechanical exhaust ventilation.

III. The making up of charges for the lead-blasting furnaces being recognised as offering special risk to the health of workers engaged therein, the department requires the thorough sprinkling of all materials handled in such charges, to the end that they may be damp when dumped upon the feed floor.

IV.—In view of the fact that in the event of the breakdown or repair of any mechanical exhaust system for the control of fumes generated in the various tapping operations of the blast furnaces treating head ores or leady copper ores the workers on the feed floor will be exposed to risk if the floor is not tight the department requires that such feed floors shall be impervious to fume.

V. As dangerous fumes are generated in the tapping operations of lead-blast furnaces, the department requires the installation of hoods with efficient mechanical exhaust ventilation at all points where, in the tapping operations, fumes are liberated.

VI. To prevent fumes and gases issuing from the charging openings of lead and copper blast furnaces, the department requires flues of a sufficient size, with an efficient natural or mechanical draught, and suitable provision for any accidental blocking which may occur, *e.g.*, providing each furnace with a separate stack communicating directly with the air and closed with a damper.

VII.—(a) In view of the unsanitary features of hand shaking of bags in the bag house or houses designed for collecting flue dust in lead and copper processes, the department requires the installation of such mechanical method for shaking as shall prevent the exposure of the workers to dusts generated in shaking the bags.

(b) The department further requires the protection of such workers as are exposed to dust in cleaning flues, bag houses, and bag-house cellars by means of the use of special clothing and approved respirators to be furnished them by the employer for such purpose; and urges the enforcement by the employer of rules calling for special sanitary precautions on the part of the workers employed.

(c) As the cleaning of flues, bag house, and bag-house cellars is universally recognised as an employment hazardous to health, the department calls the attention of employers to the foreign practice of shortening the hours of such workers as are directly exposed to flue dust in cleaning processes.

VIII. If in any of the various operations connected with lead refining, lead fumes habitually, or from time to time, pass into the air of the workrooms, they shall be removed by means of efficient mechanical exhaust ventilation.

This applies especially to retort furnaces, cupelling furnaces, antimony slag furnaces and lead reverberatory furnaces.

IX. In view of the fact that some copper matte contains lead, arsenic, and antimony, and that in converting copper matte there is always a copious evolution of sulphurous acid gas, the department requires the efficient hooding of all converters, and that such hoods shall effectively remove the fumes and gases generated, whatever may be the position of the converter.

X.—(a) To protect the health of the workers, the department requires that the electrolytic tanks be placed in spacious, well-ventilated buildings, and, where necessary, that fresh air shall be continually supplied by means of fans.

(b) The department requires that all liberating tanks shall be so protected that the gas bubbles rising to the surface shall not spray the acid solution into the air of the tank rooms.

(c) The department requires that the purifying of the foul electrolytic solutions, and the precipitation of copper from the solutions by means of iron, shall either be carried on in tanks placed under a hood or hoods connected with effective mechanical exhaust ventilation, or that such tanks shall be placed in the open air in such position that the gases given off will be quickly diffused and not be a source of harm.

XI. The department suggests the adoption of air rabbling of the copper refining furnaces, as hand rabbling exposes the worker to excessive heat and glare.

XII. The department urges the elimination of hand charging of the anode and cathode furnaces, to the end that the prevailing mechanical injuries to the workers may be lessened.

XIII. In order that the air of the workrooms in which furnace processes are carried on may be kept free from dust, the department requires that skimmings, drosses, matte, and slag from



furnaces shall not be allowed to accumulate on the floors of the workrooms; that all such by-products as produce dust shall be thoroughly sprinkled before transportation; and that no dry sweepings but only wet cleaning shall be permitted in the departments where lead is treated.

XIV. Because of the production of lead oxides, and the possible evolution of lead fumes in the melting of pig lead for trade purposes, or in the manufacture of lead alloys not containing arsenic, the department requires the protection of all such lead-melting and alloy kettles by means of hoods connected with an efficient method of ventilation.

XV. In view of the dangerous character of the fumes liberated in the making of alloys of lead and arsenic, and of the lead oxides and fumes produced in the melting of scrap lead, the department requires the protection of all such lead and arsenic alloy kettles and scrap lead melting kettles by means of hoods connected with efficient mechanical exhaust ventilation.

XVI. In view of the established fact that cleanliness on the part of the workers is an important factor in lessening lead poisoning in all processes in which that metal is handled, and that copper sulphate, to a greater or less degree, gets on the clothes and on the persons of workers in the electrolytic refining of copper, and that all employees in furnace processes and the handling of molten metals are exposed to excessive heat at certain times, the department requires the furnishing of sanitary lockers, dressing room or rooms, and convenient and adequate washing facilities, with shower baths for all lead and copper employees, and urges upon the management the necessity for a strict enforcement of the use of these washing facilities by the workers.

XVII. Since it is recognised that eating in workrooms contaminated by lead dust or fumes is a menace to the health of the worker, and that the general eating in rooms where metallurgical processes are carried on may, in many cases, be very questionable from a sanitary point of view, the department requires the installation of a sanitary and convenient lunch room, or rooms for the use of all lead and copper employees, and urges upon the management the necessity for a strict enforcement of their use.

The efficient mechanical exhaust ventilation required is fixed by the State's standard of 1912.

Sufficient suction head shall be maintained in each branch pipe within 15 inches of the hoods to raise 2 inches of water column in a U-shaped tube. Pressure to be taken by pressing tube attachment over small opening through pipe, commonly called static method. Tests to be made with all branches open and unobstructed.

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**UNITED STATES OF AMERICA (MISSOURI).****Health and Safety Act.****GENERAL PROVISIONS FOR HEALTH AND SAFETY—PROTECTION FROM OCCUPATIONAL OR INDUSTRIAL DISEASES—PENALTY.**

An Act to promote the public health by protecting certain employees in this State from the dangers of occupational or industrial diseases, providing penalties, and providing for the enforcement thereof.

*Section*

1. Employer to provide protection to employees from disease.
2. Articles considered dangerous to health.
3. Employees to be furnished with clothing—respirators to be used while at work.
4. Employees to be examined monthly by physician.
5. Physician to make report to State Board of Health—penalty for failure.
6. Duty of Secretary of Board of Health.

*Section*

7. Employer to provide dressing rooms, lavatories, etc.
8. Drinking fountains, ice water, etc., to be provided employees.
9. Work rooms to be kept in sanitary condition.
10. Prevention of dust.
11. Hoppers, chutes, etc., to be provided with covering.
12. Duty of State Factory Inspector.
13. Notice to be posted in rooms—to contain what.
14. Penalty for violation.
15. Term employer defined.

Be it enacted by the General Assembly of the State of Missouri, as follows :—

*Section 1.—Employer to provide protection to employees from diseases.*—That every employer of labor in this State engaged in carrying on any work, trade or process which may produce any illness or disease peculiar to the work or process carried on, or which subjects the employee to the danger of illness or disease incident to such work, trade or process, to which employees are exposed, shall for the protection of all employees engaged in such work, trade or process, adopt and provide approved and effective devices, means or methods for the prevention of such industrial or occupational diseases as are incident to such work, trade or process.

*Section 2.—Articles considered dangerous to health.*—The carrying on of any process, or manufacture, or labor in this State in which antimony, arsenic, brass, copper, lead, mercury, phosphorus, zinc, their alloys or salts or any poisonous chemicals, minerals, acids, fumes, vapors, gases, or other substances, are generated or used, employed or handled by the employees in harmful quantities, or under harmful conditions, or come in

contact with in a harmful way, are hereby declared to be especially dangerous to the health of the employees.

*Section 3.—Employees to be furnished with clothing—Respirators to be used while at work.*—Every employer in this State to which this Act applies shall provide for and place at the disposal of the employees so engaged, and shall maintain in good condition without cost to the employees, working clothes to be kept and used exclusively by such employees while at work, and all employees therein shall be required at all times while they are at work to use and wear such clothing; and in all processes of manufacture or labor referred to in this section which are productive of noxious or poisonous dusts, adequate and approved respirators shall be furnished and maintained by the employer in good condition and without cost to the employees, and such employees shall use such respirators at all times while engaged in any work productive of noxious or poisonous dusts.

*Section 4.—Employees to be examined monthly by physician.*—Every employer engaged in carrying on any process or manufacture referred to in Section 2 of this Act shall, as often as once every calendar month, cause all employees who come into direct contact with the poisonous agencies or injurious processes referred to in Section 2 of this Act, to be examined by a competent licensed and reputable physician for the purpose of ascertaining if there exists in any employee any industrial or occupational disease or illness or any disease or illness due or incident to the character of the work in which the employee is engaged.

*Section 5.—Physician to make report to State Board of Health—Penalty for failure.*—It is hereby made the duty of any licensed physician who shall make a physical examination of any employee under the provisions of Section 4 of this Act, to make within twenty-four hours a triplicate report thereof to the State Board of Health of the State of Missouri upon blanks to be furnished by said Board upon request, and if any such disease or illness is found, the physician shall so report, and if any such disease is found, the report shall state the name and address and business of such employer and the nature of the disease in precise and definite terms of all the diseases or illness with which the employee is afflicted and the probable extent and duration thereof, the name and business of employer, and the last place and length of employment: Provided, that the failure of any such physician to receive blanks from the State Board of Health for making such a report shall not excuse the physician from making the report as herein required. Any physician who shall fail to make a report as required by this Section shall be deemed guilty of a misdemeanor and upon conviction shall be fined not less than fifty dollars (\$50 00), and in each case shall stand committed until such fine and costs are paid unless otherwise discharged by due process of law.

*Section 6.—Duty of Secretary of Board of Health.*—The Secretary of the State Board of Health shall, immediately upon

receipt of any report from any physician in accordance with the provisions of Section 5 of this Act, transmit a copy thereof to the State Factory Inspector, and a copy to the superintendent of the factory in which the employee is supposed to have contracted his ailment.

*Section 7.—Employer to provide dressing rooms, lavatories, etc.*—Every employer engaged in carrying on any process or manufacture or labor referred to in Section 2 of this Act, shall provide, separate and apart from the workshop in which such employees are engaged, a dressing room and lavatory for the use [of] such employees who are exposed to poisonous or injurious dusts, fumes and gases, and such lavatory shall be kept and maintained in a hygienic and sanitary manner and provided with a sufficient number of basins or spigots with adequate washing facilities, including hot and cold water, clean individual towels and soap, and sufficient shower-baths, and the dressing room shall be furnished with compartment lockers, so that the ordinary street clothes of such employees shall be kept separate and apart from their working clothes. Male and female employees shall be provided for separately.

*Section 8.—Drinking fountains, ice water, etc., to be provided employees.*—No employee shall take or be allowed to take any food or drink of any kind into any room or apartment in which any process or manufacture or labor referred to in Section 2 of this Act is carried on, or in which poisonous substances or injurious or noxious fumes, dusts or gases, are present as the result of such work or process being carried on in such room or apartment, and the employees shall not remain in any such room or apartment during the time allowed for meals, and suitable provision shall be made and maintained by the employer for enabling the employees to take their meals elsewhere in such place of employment, and a sufficient number of sanitary drinking fountains containing wholesome drinking water, and providing ice for same, shall be provided and maintained for the use of the employees within reasonable access and without cost to them.

*Section 9.—Workrooms to be kept in sanitary condition.*—All employers engaged in carrying on any process or manufacture or labor referred to in Section 2 of this Act, shall provide and maintain adequate devices for carrying off all poisonous or injurious fumes from any furnaces which may be employed in any such process or manufacture or labor, and shall also provide and maintain adequate and efficient facilities for carrying off all injurious dust, and the floors in any room or apartment where such work or process is carried on shall be kept and maintained in a smooth and hard condition, and no sweeping shall be permitted during working hours except where the floor in such workshop is dampened so as to prevent the raising of dust; and all ore, slag, dross and fume shall be kept in some room or apartment separate from the workrooms occupied by the employees,

and, all mixing and weighing of such ore, slag, dross or fume shall be done in such separate room or apartment, and all such material shall be dampened or covered before being handled or transported by employees.

*Section 10.—Prevention of dust.*—When any flues or other apparatus are used in any such process or manufacture or labor referred to in Section 2 of this Act, and when such flues or other apparatus are being cleaned or emptied, the employer shall in every case provide and maintain a sufficient, adequate [and] efficient means or device, such as canvas bags or other approved device, or by dampening the dust, or some other efficient method for catching and collecting the dust and preventing it from unreasonably fouling or polluting the air in which the employees are obliged to work, and, wherever practicable, the dust occasioned in any process or manufacture referred to in Section 2 of this Act, and in any polishing or finishing therein, shall be dampened or wet down or covered, and every reasonable precaution shall be adopted by the employer to prevent the unnecessary creation or raising of dust, and all floors shall be washed or scrubbed at least once every working day; and such parts of the work or process as are especially dangerous to the employees, on account of poisonous fumes, dusts and gases, shall, where practicable, be carried on in separate rooms and under cover of some suitable and efficient device to remove the danger to the health of such employees as far as may be reasonably consistent with the manufacturing process, and the fixtures and tools employed in any such process or manufacture or labor shall be thoroughly washed and cleaned at reasonable intervals.

*Section 11.—Hoppers, chutes, etc., to be provided with covering.*—All hoppers or chutes or similar devices used in the course of any process or manufacture referred to in Section 2 of this Act shall be provided with a hood or covering, and an adequate and efficient apparatus or other proper device for the purpose of drawing away from the employees noxious, poisonous or injurious dusts, and preventing the employees from coming into unnecessary contact therewith; and all conveyances or receptacles used for the transportation about or the storage in any place where any such process or manufacture or labor referred to in Section 2 of this Act is carried on, shall be properly covered or dampened in such a way as to protect the health of the employees, and no refuse of a dangerous character incident to the work or process carried on in any such place shall be allowed to remain accumulated on the floors thereof.

*Section 12.—Duty of State Factory Inspector.*—It shall be the duty of the State Factory Inspector to enforce the provisions of this Act and to prosecute all violations of the same before any magistrate or any court of competent jurisdiction in this State, and for that purpose the State Factory Inspector and his assistants are empowered to and shall visit and inspect, at least

once a year, and at reasonable hours, and as often as practicable, all places of employment covered by the provisions of this Act.

*Section 13.—Notices to be posted in rooms—to contain, what.*—For the purpose of disseminating a general knowledge of the provisions of this Act and of the danger to the health of employees in any work or process covered by the provisions of this Act, the employer shall post in a conspicuous place in every room or apartment in which any such work or process is carried on appropriate notices of the known dangers to the health of any such employees arising from such (employees arising from such) work or process, and simple instructions as to any known means of avoiding, so far as possible, the injurious consequences thereof, and the State Factory Inspector shall have prepared a notice covering the salient features of this Act, and furnish a reasonable number of copies thereof to employers in this State, affected by the provisions of this Act, which notice shall be posted by every such employer in a conspicuous place in every room or apartment in such place of employment. The notices required by this section shall be printed on cardboard of suitable character and the type used shall be such as to make them easily legible.

*Section 14.—Penalty for violation.*—Any person, firm or corporation who shall personally, or through any agent, violate any of the provisions of this Act, or who fails or refuses to comply with any of its requirements, or who obstructs or interferes with any examination or investigation being made by the State Department of Factory Inspection in accordance with the provisions of this Act, or any employee who shall violate any of the provisions of this Act, shall be deemed guilty of a misdemeanor, and on conviction thereof shall be punished by a fine of not less than twenty-five dollars (\$25.00) or more than two hundred dollars (\$200.00) and in each case shall stand committed until such fine and costs are paid, unless otherwise discharged by due process of law.

*Section 15.—Term employer defined.*—In this Act, unless the context otherwise requires, “employer” includes persons, partnerships and corporations.

Approved March 27th, 1913.

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**RUSSIA.****Regulations relative to Copper, Silver Lead, and Lead Works.**

(Dated 17th-30th May, 1909.)

1. Before being engaged to work in copper, silver lead or lead-smelting works, every workman shall be examined by a medical practitioner.

2.—(1) Persons of the female sex and (2) persons of the male sex in a weak state of health or under fifteen years of age shall not be employed in roasting ore, in subjecting raw metal to Bessemer's process, or in cupelling or amalgamation work.

3. The management of the smelting works shall appoint a medical practitioner to supervise the health of the workmen. The said medical practitioner shall examine such persons at least once every month. Workmen showing symptoms of any disease of occupation shall, if the medical practitioner so requires, be suspended from their work even if their condition is not such as to render them unable to continue the work in question, and they shall not be permitted to return to work until they shall have been completely cured. The medical practitioner shall at his discretion, decide in such cases whether a workman shall be suspended from working in the smelting works altogether, or whether he may be transferred to some other which is not injurious to his health.

4. The management of the smelting works shall keep on record cards or in a bound book a register of medical examinations. On these cards or in the book there shall be entered (a) the name of the medical practitioner entrusted with the supervision of the workmen's health; (b) the name, family name, age and residence of every workman, the date of his entering and leaving the employment and the nature of his occupation; (c) the result of the medical examination of the workman on his entering the employment; (d) the date on which the workman's disease was first observed and the nature of the disease; (e) the date of his recovery, if this is known to the management of the smelting works; and (f) the dates and results of the medical examination.

The pages of the bound books and the record cards shall be numbered consecutively and the district mining engineer having authority shall place on them the necessary stamp or seal.

5. An ample supply of drinking water shall be provided near the workplaces. This drinking water shall be kept free from all impurities, and shall be available in a room which the workmen can enter without going out of doors.

6. In all works there shall be provided for the use of the workmen lavatories and cloakrooms and a separate messroom. These rooms must be provided in a part of the works into which no dust arising from the work penetrates and shall be maintained in a clean state, and heated in the cold season.

Water, soap and towels shall be provided in the lavatories and cloakrooms. In addition, a special place shall be provided in these rooms in which workmen may put clothing removed before beginning work.

The management of the smelting works shall provide a bath in the works, and shall give the workmen an opportunity of using the same at least twice a week. In exceptional cases the use of the bath shall, if the medical practitioner so requires, also be allowed during hours of work.

7. It shall be the duty of the management of the smelting works to see that the workmen observe the following regulations : (a) they shall not take meals except in the rooms provided for the purpose, and must not take food into the workrooms ; and (b) they shall not enter the messroom, commence eating or leave the works until they have first carefully washed their hands and faces.

8. The present regulations shall be affixed in a conspicuous place in every workroom and in the messrooms and cloakrooms and shall be printed in the employment books to be given to the workmen.

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## RUSSIA.

### **Regulations relative to the Manufacture of Lead Preparations.**

(19th February to 3rd March, 1913. Confirmed 31st March to 13th April, 1913.)

1. The provisions referred to in regulations 2 to 25 of these regulations shall apply to all factories and workshops in which the manufacture of lead preparations, such as white-lead, acetate of lead, red lead, etc., is carried on.

These regulations shall not apply to lead-smelting works.

2. The ceilings, walls, and floors of the factory premises shall be maintained in a thoroughly clean condition. The floors and walls shall be so constructed that they can be easily washed ; if this condition cannot be complied with, they shall, as often as possible, be cleansed from all dust and be white-washed at least twice a year (in spring and autumn). The floors shall be even and impervious to water, and shall be cleaned daily, and, if not already permanently maintained in a damp state for the purposes of the work, they shall be cleaned by a wet method.

3. The opening of the furnace shall be provided with hoods, having ventilation pipes for drawing off the dust when the furnaces are emptied. The premises in which the lead is smelted and the lead plates are cast, shall be provided with suitable artificial ventilation.

4. The litharge shall be carried from the oxydising room into the straining chamber in closed receptacles, out of which it shall be poured directly into the sieve or emptied into a separate box,



impervious to the contents and hermetically closed, by means of special openings provided in the sides of the box which can be shut by means of flaps; the litharge shall be conveyed automatically from the box to the sieve, either through an automatic discharge or by means of a mechanical device.

5. The newly sifted litharge, as well as the dry cast lead, shall be conveyed directly to closed receptacles, out of which they shall be taken, as and when required, into the room in which the white lead is manufactured.

6. The chambers used in the process of the manufacture of white lead, the Jaroslaw white lead chambers, and the lathes, at the time when the sheets of lead are hung up, shall be kept in a moist condition. After termination of the process of manufacture of white lead, and before the workers are permitted to enter the chambers, the latter must be sufficiently cooled and aired, and also sufficiently moistened to prevent the spread of lead dust during the emptying process. The same regulation shall apply to the Jaroslaw white lead chambers. Thermometers shall be placed in these rooms.

7. The removal of the white lead from the lathes, the mixing of the litharge and of the lead with the acetate for the manufacture of white lead, the rubbing of the white lead through a sieve, as well as the smoothing out of the damp mass in the moulds shall, in no circumstances, be carried out directly by hand.

8. The dried white lead shall be poured into closed receptacles, impervious to the contents, and taken in these to the mill, where it shall be automatically conveyed into the grinding apparatus.

9. The sifting apparatus for the litharge and the apparatus for the grinding of the white lead shall be placed in jackets impervious to the contents and provided with ventilation piping. When the apparatus is not automatically started, the crank-handle, by means of which it is set in motion, shall be led through the wall into an adjoining room; this last requirement shall not apply to portable apparatus.

10. The packing of lead preparations, either in the shape of powder or in pieces, shall, as far as possible, be automatically carried out in rooms separated from the remaining workshops and provided with sufficient ventilation.

11. The conveyance, the transfer, and the storing of all manufactured products (both the final and the intermediate products) shall be carried out in such a manner as not to produce any dust.

12. Workers who have not yet attained 15 years of age shall not be employed on work in the factories and workshops enumerated in regulation 1 of these regulations. Female workers and minors between the ages of 15 and 17 shall only be allowed to be employed on work in which they are not exposed to the action of lead dust, lead gases, and lead fumes, and do not come in contact with substances containing lead.

13. Every worker shall be medically examined before being engaged for any of the work mentioned in regulation 1 of these regulations.

14. A medical man shall constantly supervise the state of health of the workers. The workers shall be medically examined at least twice during every month. Workers who show symptoms of any disease connected with their particular occupation shall, at the request of the medical man, be suspended from their occupation, even if their condition would not prevent them from continuing their work, and shall not be allowed to resume work until they have entirely recovered. In this connection, it shall rest with the medical man to decide whether such workers shall be entirely removed from work in the factory or be transferred to other occupations not injurious to their health.

15. The works' management shall be compelled to keep a record of medical examinations, either on registration slips or in a bound book. The following information shall be entered on the above-mentioned slips or in the book :—(a) The name of the medical man entrusted with the supervision of the health of the workers; (b) the name, family, age and place of residence of each worker, the date on which he entered upon and on which he left his employment, the nature of his occupation; (c) the dates of the medical examinations of the workers on their engagement; (d) the date on which the sickness was ascertained, and the nature of the illness; (e) the date of recovery, when it is known to the works' management; and (f) the dates and the results of the medical examinations.

16. The duration of the working-time, after deducting the periods of rest, shall not exceed, within the twenty-four hours :—(1) Five hours for workers employed in the Jaroslaw white lead chambers; (2) eight hours for workers occupied in charging and emptying the chambers, and with the straining, casting and grinding of the white lead; (3) 10 hours for other workers who come in contact with lead and substances containing lead.

17. The works' management shall be compelled to supply free of charge to all workers, during working hours, overalls, trousers, and head-coverings, and to the workers engaged in the emptying of the chambers in which the white lead is manufactured, foot-coverings also. All these articles (with the exception of the foot coverings) shall be changed and washed at least once a week at the expense of the works' management.

18. Workers shall only be admitted to occupations, during the process of which lead dust is given off, on condition that their noses and mouths are covered by the respirators supplied to them by the works' management. These respirators shall be washed and disinfected daily after the termination of the work, and shall be stored in special locked rooms.

19. Where sifting is carried on, it shall be effected by means of brushes, which shall be supplied in sufficient numbers by the works' management.

20. Lavatories and dressing-rooms for the workers shall be provided in the factories. These premises shall be situated in a part of the factory where no factory dust can penetrate, preferably in an adjoining building; they shall be maintained in a clean condition, heated and so arranged that the workers, after they have washed, shall not again have to pass through work-rooms and through rooms in which working clothes are stored. In the lavatories (in accordance with the requirements of the medical man) hot water shall be provided for rinsing the mouth and washing the hands, also soap, a sufficient number of towels and brushes, for cleaning the nails, as well as a lotion. The towels shall be changed and washed at least twice a week at the expense of the works' management. Persons specially appointed by the works' management shall be in charge of the lavatories and their accessories, and shall exercise as regards cleanliness and order. Two locked chests, separated from each other, shall be provided in the dressing-room, one to receive the articles enumerated in regulation 17, and the other to receive the ordinary articles of clothing taken off by the workers before beginning their work.

21. Good drinking water shall be supplied to the workers; it shall be kept in hermetically sealed receptacles into which no dust can penetrate.

22. The works' management shall be compelled to allow all workers to make use of the baths free of charge at least once a week, and more often if desired.

23. Preventive medicines shall only be given on the medical man's prescription.

24. The works' management shall see that the workers observe the following regulations:—

- (a) They shall eat no food in any workrooms, nor shall they smoke or introduce any kind of food into such premises.
- (b) They shall put on, before commencing work, the articles of clothing provided for them by the works' management, and, when their occupation requires it, make use of the respirators;
- (c) They shall not enter into the messrooms, begin any meal, or leave the factory, without having previously changed their clothing, removed all factory dust from their foot-covering by a moist method and carefully washed hands and face.

25. These regulations shall be posted up in a prominent position in all workrooms, messrooms, and dressing-rooms, and shall also be entered in the wages books to be handed to the workers.

**GREECE.****Regulations with respect to Sanitary Conditions in Printing Works.**

(11th-24th February, 1914).

1. In addition to the general provisions contained in the Royal Decree, dated 25th April—8th May, 1913, "hygienic conditions and the safety of workers in factories, etc.," the special provisions of the following sections shall be adhered to in printing works; if, when applying these special provisions it should be found that they are in contradiction with the general provisions of the Royal Decree dated 25th April—8th May, 1913, the former should be given the preference.

2. The height of the composing rooms shall be at least 3 m.; air space of at least 10 cub.m. shall be provided for every worker. Rooms in which work is carried on by means of linotype machines shall have a height of at least 3 m., and in these rooms air space of at least 20 cub.m. shall be provided for every worker.

The cubic contents of the workrooms shall be stated on a notice, which shall bear the signature of the employer and be exhibited in the workroom, in a place where it can be easily seen by the staff.

In cases of temporary or extraordinary requirements, permission may be obtained from the competent Prefecture, upon application made by the employer, to employ in the workrooms a larger number of workers than that corresponding to the cubic contents of such rooms, but only for periods not exceeding 14 days in every year; the average air space per person shall never be below 8 cub.m.

3. The floor of the several rooms of the building shall be covered with a dry and waterproof material without joints, so that the creation of dust and accumulation of dirt may be prevented and that the rooms may be cleaned without difficulty.

In printing works in which less than eight workers are employed the floor may be of wood; in such a case, however, the floor shall be saturated with boiled linseed oil or receive a coating of oil colour. The joints of the floor shall be caulked.

4. The walls and ceilings shall be distempered with a light water colour, unless they are coated with a waterproof and smooth material, which can be washed at regular intervals. Distempering shall be renewed once in every year.

5. All parts of the letter cases and the remaining furniture shall be fixed to the floor in such a manner that no dust can accumulate under the same or shall rest on supports so that there remains a sufficiently high intermediate space between the supports and the floor for sweeping and washing the latter without difficulty.

6. The floor shall be swept daily with a wet broom, at a time when no work is being carried on; as far as possible, the floor shall also be washed.

The letter cases, furniture, windows, and all other articles shall be dusted with a wet cloth; for removing the dust, a dust suction apparatus may also be used. In this operation the raising of dust shall be avoided.

7. If the letter cases are dusted in the open air, bellows may be used for the purpose. For dusting the letter cases in the workroom itself, a special dust suction apparatus shall be used.

8. Printing works shall not be installed in underground premises the floor of which is more than 1.50 m. below the level of the street.

It shall be permissible to erect printing machines in underground rooms, if the latter are airy, light and dry (see section 7 (3) of the Royal Decree dated 25th April—8th May, 1913) with respect to the administration of the Act respecting hygienic conditions and safety of workers in factories.

9. The washing of type and printing plates on the floor of the printing works is prohibited. For this purpose a large trough shall be used. After the washing, the water shall be poured into a covered pit or drain.

10. In winter the renewal of air in the workrooms shall be effected by a sufficient number of air pipes to be fitted above the windows. In summer the windows shall remain open as far as possible. The hours of opening shall coincide with the hours of rest.

During every midday interval and every evening the air shall be completely renewed by doors and windows being kept open.

11. Clothing taken off during working hours shall be kept in a special room.

The workers shall be bound to provide for themselves, at their own expense, a blouse with narrow sleeves, closed at the neck. This blouse shall be worn during working hours.

12. The employers shall be bound to see that washing basins, with a sufficient quantity of water and soap, are at the disposal of the workers.

One washing basin shall be provided for every 15 workers.

Every worker shall provide himself, at his own expense, with a clean towel. After termination of the work, and before meals, he shall carefully wash his hands and face on the premises.

13. The compositors shall be prohibited from holding type in their mouths and from smoking during work.

14. A sufficient number of spittoons shall be provided in every workroom, and these shall be placed at a height of at least 75 cm. from the floor and be filled with an antiseptic substance, and cleaned once every day. Spitting outside the spittoon is prohibited.

15. The employer shall be bound to see that the provisions contained in regulations 11 and 12 (paragraphs 3), 13 and 14 of these regulations are strictly adhered to. These regulations shall be exhibited in the workrooms. The employers shall be entitled to avail themselves of the provisions of Act No. 4,030, "on the payment of wages, etc.," in the case of non-observance of the foregoing regulations on the part of the workers, by which provisions they are entitled to impose fines.

16. The water tanks and jars containing drinking water shall always be carefully cleaned and covered.

17. If any printing works possess typefoundry and stereotype installations as accessory departments, these shall be arranged in a special section of the building and be entirely independent and separate from the remaining rooms.

18. The linotype and monotype machines, and generally all machines in connection with typefoundry, shall be installed in a special section of the building, entirely independent and separate from the remaining rooms.

19. All machines and furnaces referred to in the foregoing regulations 17 and 18 shall be provided with a separate smoke and steam exhaust pipe, which shall be so fitted that all fumes and heavy gases are sucked off and conducted into the open air.

The main steam and smoke pipe shall be provided at its outlet with a rotating fan or, internally, with a flame of lighting gas, which shall be continually burning during the working of the said machinery, so that, in this manner, all noxious gases and vapours may be easily removed.

20. The employers are prohibited from employing in their concerns workers who are not in possession of a book proving their identity and good state of health.

This book shall be issued by the competent police administration or sub-administration.

A Committee consisting of a police commissary, two police or private physicians, to be proposed by the Prefect, one representative of the employers, and one representative of the workers in the printing trade and holding its meetings at the police office, shall examine every worker appearing before it with respect to his health, and shall declare whether the state of health of the person so examined is such that he may be employed without injury to his health; this Committee shall enter its certificate on a special page of the book of identity and the certificate shall be signed by at least two members of the Committee. If no organisations of the employers and of the workers in the printing trade exists, or if there exists several of such organisations in one and the same place, and these are not able to agree upon the election of representatives or refuse to send representatives to the Committee, the competent police authority shall be entitled to appoint one representative from amongst the employers and one from amongst the workers in the printing trade as members of the Committee.

The employer shall see that the medical examination is repeated every year, and that the certificate in question is entered in the book of identity. The Committee shall be competent to pass valid resolutions, if at least the police commissary and one of the police physicians are present.

With respect to the first application of these regulations, the medical examination of the workers by the Committee shall be carried out in the respective printing works in accordance with this regulation.

21. It is prohibited to employ persons under the age of 16 and female persons under the age of 18 in type foundries, stereotyping establishments, and on linotype machines (Section 37 of the Royal Decree dated 11th-24th August, 1913, with respect to the administration of Act No. 4029, concerning the work of women and minors).

22. These regulations shall come into force after the publication of the Royal Decree in question, without prejudice to the provisions of regulations 2, 3 and 8 (para. 1) which shall apply only to printing works to be established in future.

23. Infringements of the provisions of this Decree shall be punishable in virtue of the provisions of sections 3 and 4 of Act No. 3934 with respect to hygienic conditions and safety of workers, and working hours.

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## APPENDIX A.

## REGULATIONS (GREAT BRITAIN).

**Manufacture of Carbonate, Sulphate, Nitrate or Acetate of Lead.**

(August 23, 1921.)

In pursuance of Section 79 of the Factory and Workshop Act, 1901, I hereby make the following Regulations, and direct that they shall apply to all factories and workshops or parts thereof (other than laboratories) in which is carried on

THE MANUFACTURE OF CERTAIN COMPOUNDS OF LEAD, NAMELY, ANY CARBONATE, SULPHATE, NITRATE OR ACETATE OF LEAD.

These Regulations shall come into force on 1st October, 1921.

*Definitions.*<sup>(1)</sup>

In these Regulations:—

“*Lead compounds*” means any carbonate, sulphate, nitrate or acetate of lead, or any lead material used in the manufacture of such compounds and containing 5 per cent. or more of lead but excluding metallic lead or ores which contain lead only in the form of sulphide.

“*Lead process*” means—

- (i) manipulation, movement or other treatment of *lead compounds* involving exposure thereto, and
- (ii) cleaning, repairing or demolition of any part of any building or plant which has contained *lead compounds*, or reconstruction of any such building or plant with material which has formed part thereof.

“*Damp*” means sufficiently moist to allay dust.

“*Surgeon*” means the Certifying Factory Surgeon of the district or a duly qualified medical practitioner appointed by written certificate of the Chief Inspector of Factories, which appointment shall be subject to such conditions as may be specified in that certificate.

“*Suspension*” means suspension from employment in any *lead process* by written certificate in the Health Register, signed by the *Surgeon*, who shall have power of *suspension* as regards all persons employed in any *lead process*.

“*Approved*” means approved in writing by the Chief Inspector of Factories. Any such approval may at any time be revoked by notice in writing signed by the Chief Inspector of Factories.

*Duties.*

It shall be the duty of the occupier to observe Part I. of these Regulations.

It shall be the duty of every person employed to observe Part II. of these Regulations.

*Part I.—Duties of Occupiers.*

1.—(a) Where white lead is made by the “*stack*” process every stack shall be provided with a standpipe and movable hose, and an adequate supply of water distributed by a rose.

(b) Every white bed shall, on the removal of the covering boards, be effectually *damped* by the means mentioned above.

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(<sup>1</sup>) Terms to which defined meanings are given are printed throughout the Regulations in italics.



2. Where white lead is made by the "chamber" process, the chamber shall be kept *damp* while the process is in operation, and the corrosions shall be effectually *damped* before the chamber is emptied.

3.—(a) Corrosions shall not be carried except in trays of impervious material.

(b) No person shall be allowed to carry on his head or shoulder a tray of corrosions which has been allowed to rest directly upon the corrosions, or upon any surface where there are any dry *lead compounds*.

(c) All corrosions before being put into the rollers or washbecks, shall be effectually *damped*, either by dipping the tray containing them in a trough of water or by some other *approved* method.

4. The floor round rollers and open vats and of any place where dry *lead compounds* are packed or manipulated, or where cooping of old casks which have previously contained *lead compounds* is carried on, shall be of smooth cement or other smooth impervious material, and shall be kept constantly *damp*.

5.—(a) Every stove which is entered for the purpose of emptying shall have a window, or windows, with a total area of not less than 8 square feet, made to open, and so placed as to admit of effectual through ventilation.

(b) In no stove shall bowls be placed on a rack which is more than 10 feet from the floor.

(c) Each bowl shall rest upon the rack and not upon another bowl.

(d) No stove shall be entered for the purpose of drawing until the temperature at a height of 5 feet from the floor has fallen either to 70° F., or to a point not more than 10° F. above the temperature of the air outside.

(e) In drawing any stove or part of a stove there shall not be more than one stage or standing place above the level of the floor.

Provided that, if *approved*, any other means of securing effectual through ventilation of a stove may be adopted, notwithstanding paragraph (a) of this Regulation; and if *approved*, any other method of setting and drawing the stoves, which effectually prevents the inhalation of *lead compounds*, may be followed, notwithstanding paragraphs (b) and (e) of this Regulation.

6. No person shall be employed on more than two days in any week in drawing any internally heated stove which is entered for the purpose of emptying.

7. No dry *lead compounds* shall be deposited anywhere except in an enclosure or receptacle that is provided either with a cover or with efficient means for preventing the escape of dust from such *lead compounds* into any workroom.

8. The treatment or packing of dry *lead compounds* shall be done only under conditions which either

(1) prevent the escape of dust from such compounds, or

(2) secure the effectual removal of such dust at or as near as practicable to its point of origin.

9. Every lead melting pot shall be provided with a proper enclosure fitted with hinged or sliding doors on any openings necessary for manipulative purposes; and every such enclosure and every furnace used in connection with a *lead process* shall be provided with an efficient exhaust draught for effectually preventing the escape from such enclosure or furnace of any dust or fume containing lead into any workroom.

10. No skimmings, dross or similar material containing lead shall be removed from the exhaust draught required by Regulation 9 unless in a suitable covered receptacle.

11.—(a) Every person employed in a *lead process* shall be examined once a week (or at such other intervals as may be *approved*) by the *Surgeon*, who shall have power to order *suspension* from employment in any place or process.

(b) No person after such *suspension* shall be employed in a *lead process* without the written sanction of the *Surgeon*.

(c) A Health Register in an *approved* form shall be kept, and shall contain a list of all persons employed in *lead processes*.

12. The occupier shall provide and maintain sufficient and suitable overalls and head-coverings and clean respirators, and shall cause them to be worn as directed in Regulation 25.

At the end of every day's work they shall be collected and kept in proper custody in a suitable place set apart for the purpose.

They shall be thoroughly washed or renewed every week; and those which have been used in the stoves shall be washed or renewed daily.

13. The occupier shall provide and maintain for the use of all persons employed, and remaining on the premises during meal intervals, a suitable and adequate mess-room, which shall be furnished with

- (a) sufficient tables and chairs or benches with back rests, and
- (b) adequate means for warming food and boiling water.

The mess-room shall be sufficiently warmed for use during meal intervals.

14. The occupier shall provide and maintain for the use of all persons employed suitable accommodation for clothing put off during working hours, with adequate arrangements for drying the clothing if wet. The cloak-room shall be separate from the mess-room.

15. There shall be provided and maintained in a cleanly state and in good repair for the use of all persons employed in a *lead process*:—

- (a) a lavatory, under cover, with a sufficient supply of clean towels, renewed daily, and of soap and nail brushes, and with either:—
  - (i) a trough with a smooth impervious surface, fitted with a waste-pipe without plug, and of such length as to allow at least two feet for every five such persons employed at any one time, and having a constant supply of warm water from taps or jets above the trough at intervals of not more than two feet; or
  - (ii) at least one lavatory basin for every five such persons employed at any one time, fitted with a waste-pipe and plug, and having a constant supply of hot and cold water or warm water laid on; and
- (b) sufficient and suitable bath accommodation (douche or other) with hot water laid on, unless the water supply provided under paragraph (a) is so arranged that a warm douche for the face, neck and arms can be taken.

There shall, in addition, be means of washing in close proximity to the workers of each department, if required by notice in writing from the Inspector in charge of the district.

There shall be facilities, to the satisfaction of the Inspector in charge of the district, for the workers to wash out their mouths.

16. Before each meal, and before the end of the day's work, at least ten minutes in addition to the regular meal times, shall be allowed to each worker for washing.

A notice to this effect shall be affixed in each department.

17. The mess-room, cloak-rooms, baths, and sanitary conveniences shall be placed under the charge of a responsible person, and shall be kept clean.

18. The floor of each workroom in which a *lead process* is carried on shall be cleaned daily, after being thoroughly *damped*.

#### *Part II.—Duties of Persons Employed.*

19. No person shall strip a white bed or empty a chamber unless such bed or chamber is effectually *damped* as required by Regulations 1 and 2.

20. No person shall carry corrosions, or put them into the rollers or washbecks, otherwise than as permitted by Regulation 3.

21. No person shall set or draw a stove otherwise than as permitted by Regulations 5 and 6.

22. No person shall deposit or pack dry *lead compounds* otherwise than as permitted by Regulations 7 and 8.

23. Every person employed in a *lead process* shall present himself at the appointed times for examination by the *Surgeon*, as provided in Regulation 11.

24. No person, after *suspension* by the *Surgeon*, shall work in a *lead process* without his written sanction.

25.—(a) Every person engaged in—

White beds,  
Emptying chambers,  
Rollers, washbecks or grinding,  
Setting or drawing stoves,  
Packing,  
Paint mixing,  
Handling dry *lead compounds*,

or in any work involving exposure to dust of any *lead compounds*, shall, while so occupied, wear an overall suit and head-covering;

(b) Every person engaged in—

Emptying white beds,  
Emptying chambers,  
Dry grinding,  
Packing of dry *lead compounds*,  
Handling dry *lead compounds*,  
Entering a chamber used for the condensation or recovery of *lead compounds*,

shall, while so occupied, wear a respirator.

26. Every person engaged in any place or process named in Regulation 25 shall, before partaking of meals or leaving the premises, deposit his overalls and head-covering and respirator in the place appointed by the occupier for the purpose.

27. Each person employed in a *lead process* shall before partaking of food or leaving the premises, wash his face, neck and arms in the lavatory provided for the purpose under Regulation 15 and where bath accommodation is provided, shall take a bath at the factory at least once a week.

28. No person employed in a *lead process* shall smoke or use tobacco in any form, or prepare or partake of food or drink, elsewhere than in the mess-room.

29. No person shall in any way interfere, without the knowledge and concurrence of the occupier or manager, with the means and appliances provided for the removal of dust.

*E. Shortt,*

One of His Majesty's Principal  
Secretaries of State.

Whitehall,  
23rd August, 1921.

## APPENDIX B.

ORDERS MADE NOVEMBER 8, 1921, UNDER THE WOMEN AND YOUNG PERSONS (EMPLOYMENT IN LEAD PROCESSES) ACT, 1920.

S.R. & O., 1921, Nos. 1713, 1714, 1715.

### (1) Meaning of "Lead Compound."

In pursuance of Section 6 of the Women and Young Persons (Employment in Lead Processes) Act, 1920, I hereby order that for the purposes of the said Act the expression "lead compound<sup>(1)</sup>" shall mean any

(1) Under the provisions of section 6 of the Act the expression "lead compound" will also include any mixture containing any such compound (as defined in the above Order) but does not include an alloy containing lead.

compound of lead other than galena which, when treated in the manner prescribed below, yields to an aqueous solution of hydrochloric acid, a quantity of soluble lead compound exceeding, when calculated as lead monoxide, five per cent. of the dry weight of the portion taken for analysis.

The method of treatment shall be as follows:—

A weighed quantity of the material which has been dried at 100° C. and thoroughly mixed is to be continuously shaken for one hour, at the common temperature, with 1,000 times its weight of an aqueous solution of hydrochloric acid containing 0.25 per cent. by weight of hydrogen chloride. This solution is thereafter to be allowed to stand for one hour and then filtered. The lead salt contained in the clear filtrate is then to be precipitated as lead sulphide and weighed as lead sulphate.

*E. Shortt,*

One of His Majesty's Principal  
Secretaries of State.

Whitehall,

8th November, 1921.

## (2) Medical Examination.

In pursuance of Section (2)<sup>(1)</sup> (b) of the Women and Young Persons (Employment in Lead Processes) Act, 1920, I hereby make the following Order with respect to the employment of women and young persons in any process involving the use of a lead compound to which the said Section applies,<sup>(1)</sup> hereinafter referred to as a lead process.

1. All women and young persons employed in a lead process and not subject to periodic medical examinations under any Regulations in force under the Factory and Workshop Acts, shall be examined by the Certifying Surgeon for the district appointed under the Factory and Workshop Act, 1901,<sup>(2)</sup> once in every three months, on a date of which due notice shall be given.

2. Every such woman and young person shall be supplied by the employer with a health register in the approved form in which the Certifying Surgeon shall enter the dates and results of his examinations and particulars of any directions given by him.

Where the process is carried on in a factory or workshop, such register shall be kept by the occupier but shall be open to the inspection of the worker concerned and shall be handed to the worker on the termination of the employment. Where the process is carried on elsewhere, the register shall be kept by the worker, and shall be produced when required by the employer or by the Surgeon for the purpose of carrying out his duties under this Order.

3. The Certifying Surgeon shall be entitled to charge the employer the following fees in respect of examinations made in pursuance of this Order: (a) where the examination is made at the works, the same fees as are payable on examinations made in pursuance of Regulations under Section 79 of the Factory and Workshop Act, 1901, (b) where the examination is made at his Surgery, a fee of one shilling.

*E. Shortt,*

One of His Majesty's Principal  
Secretaries of State.

Whitehall,

8th November, 1921.

(1) The processes to which section 2 of the Act applies are those in which dust or fume from a lead compound is produced, or the persons employed are liable to be splashed with any lead compound. See *supra* as to meaning of "lead compound."

(2) 1 E. 7. c. 22.

### (3) Cloakroom, Messroom, and Washing Accommodation.

In pursuance of Section (2) (1) (e) of the Women and Young Persons (Employment in Lead Processes) Act, 1920, I hereby make the following Order to apply to all factories and workshops or parts of factories or workshops in which women or young persons are employed in any process to which the said Section applies,<sup>(1)</sup> hereinafter referred to as a lead process.

1. The occupier shall provide and maintain for the use of all women and young persons employed in a lead process, suitable accommodation for clothing put off during working hours.

The accommodation so provided shall be placed under the charge of a responsible person, and shall be kept clean.

2. The occupier shall provide and maintain for the use of all women and young persons employed in a lead process and remaining on the premises during meal intervals suitable and adequate arrangements for taking their meals. The arrangements shall consist of the use of a room separate from any workroom, which shall be furnished with sufficient tables and chairs or benches with back rests, and unless a canteen serving hot meals is provided, adequate means of warming food and boiling water. The room shall be sufficiently warmed for use during meal intervals, shall be placed under the charge of a responsible person, and shall be kept clean.

3. The occupier shall provide and maintain for the use of all women and young persons employed in a lead process suitable washing facilities, comprising a sufficient supply of clean towels, soap, nail brushes and warm water, adjacent to the place where the work is done.

The facilities so provided shall be placed under the charge of a responsible person, and shall be kept clean.

*E. Shortt,*

One of His Majesty's Principal  
Secretaries of State.

Whitehall,  
8th November, 1921.

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<sup>(1)</sup> The processes to which section 2 of the Act applies are those in which dust or fume from a lead compound is produced, or the persons employed are liable to be splashed with any lead compound. See *supra* as to meaning of "lead compound."

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(1) List of abbreviations used:—Gt. Br., Great Britain; Ger., Germany; Fr., France; Belg., Belgium; Neth., Netherlands; Russ., Russia; Switz., Switzerland; U.S.A., United States of America; Tas., Tasmania; Un. of S.A., Union of South Africa; Rhod., Rhodesia; Ind., India; Aust., Austria; S. Australia, South Australia; N.S.W., New South Wales; Vic., Victoria; U.K., United Kingdom; Czecho Slov., Czecho Slovakia.

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